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APPENDIX

V CRS Issue Brief: "Agriculture: Parity, Parity, Parity" by Leo Mayer, Senior Specialist, Agriculture. 72 1/G2

ABBREVIATIONS

AAM	American Agricultural Movement
CBO	Congressional Budget Office
CRS	Congressional Research Service
EEC	European Economic Community
GAO	General Accounting Office
USDA	Department of Agriculture

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REPORT BY THE

Comptroller General

OF THE UNITED STATES

COMPLETED
ORIGINAL

An Assessment Of Parity As A Tool For Formulating And Evaluating Agricultural Policy

Policymakers regard parity, a measure of the purchasing power of farm commodities, as a barometer of the economic health of agriculture. Although it is a useful barometer, it does not reflect total farm sector well-being.

For many years, the trends in U.S. agriculture have been toward greater technological advances, declining margins, declining numbers of farms, and increasingly larger farms. Although the Nation has generally benefited from these trends, recent studies have suggested that if the trends continue unabated, the secondary impacts may well be a loss of farm sector resiliency, a decline in rural viability, a cutback in efforts to conserve our fertile soil, and less competition. Parity by itself is not a good indicator of these impacts.

In addition to parity, the Congress and other policymakers need a broader framework to use in developing, analyzing, and evaluating farm policies and programs. GAO recommends that the Secretary of Agriculture develop a comprehensive and systematic framework for the use of policymakers in formulating and evaluating various policy options for U.S. agriculture.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-196479

The Honorable Richard Nolan
Chairman, Subcommittee on Family
Farms, Rural Development, and
Special Studies
Committee on Agriculture

The Honorable Fred Richmond
Chairman, Subcommittee on Domestic
Marketing, Consumer Relations,
and Nutrition
Committee on Agriculture
House of Representatives

This report, in response to your request, discusses parity as a tool for formulating and evaluating agricultural policy.

The report recommends that the Secretary of Agriculture develop a comprehensive framework to be used in addition to parity for formulating and evaluating agricultural policy.

At your request, we did not obtain formal agency comments.

We are sending copies of this report to the Secretary of Agriculture; the Director, Office of Management and Budget; other interested congressional committees; Senator Kassebaum; and other interested parties.

Comptroller General
of the United States

COMPTROLLER GENERAL'S REPORT
TO THE CHAIRMEN, SUBCOMMITTEE
ON FAMILY FARMS, RURAL
DEVELOPMENT, AND SPECIAL STUDIES,
AND SUBCOMMITTEE ON DOMESTIC
MARKETING, CONSUMER RELATIONS,
AND NUTRITION, HOUSE COMMITTEE
ON AGRICULTURE

AN ASSESSMENT OF PARITY AS A TOOL FOR FORMULATING AND EVALUATING AGRICULTURAL POLICY

D I G E S T

Since the 1930s the essence of U.S. farm policy has been to provide a certain level of economic security to the farm sector through various Government programs. Until 1973, these programs were linked to parity--a measure of the purchasing power of farm commodities today in relation to their purchasing power during the base period of 1910 to 1914. Although most programs are now linked to costs of production, policymakers, and others still regard parity as a barometer of the economic health of agriculture.

WHY WAS PARITY DEVELOPED?

The importance of the farm sector and its interrelationship with other sectors was recognized after World War I when farm prices plunged, farm incomes declined, and farmers cut back on purchases of all types of manufactured goods. Farm equipment producers were particularly hard hit and the idea of strengthening the farm economy was first conceived and fostered by manufacturers who depended on farm purchases for their own livelihood. During the 1930s, a parity formula was enacted by the Congress to improve farm income so that the farm sector could buy goods and services from other sectors. (See pp. 5 and 6.)

Today, there are generally three parity measures: parity prices, parity income, and the parity ratio. When farmers ask for 100 percent parity, they mean 100 percent of parity prices. When policymakers say

that farm commodities buy only 60 percent of what they did in 1910-14, they are usually referring to the parity ratio. When others say that farm incomes must be maintained at a parity level, they are probably talking about implementing support programs based on parity income.

It is apparent that parity can refer to many different things depending on which element or spin-off of the original formula is used. The essential ingredient of all of these parity terms is the same, however. That is, parity is expected to measure the economic well-being of the farm sector relative to other sectors.

HOW IS PARITY USED?

There is much confusion as to the meaning and usefulness of parity, a concept developed nearly 50 years ago. Parity is still a rallying point for many of today's farmers. Members of the Congress as well as many farmers and farm support groups rely on parity as a barometer of the farm sector's economic well-being. Also Government price support programs have been, and some still are, linked to parity although the support levels have never been 100 percent. Support levels have ranged up to 90 percent.

Parity is useful as a barometer or indicator of certain aspects of economic well-being. Changes in the parity ratio have tracked (1) structural changes (as the ratio has fallen so have the number of farms); (2) changes in farmers' margins on a per unit basis; and (3) total net farm income from marketing receipts.

Parity does not, however, adequately reflect total farm sector well-being, total personal income of farm families, or increased farm assets and equities. Also parity is a broad national indicator which may or may not reflect an individual farmer's well-being. (See pp. 9 to 21.)

WHAT ARE THE MAJOR TRENDS IN AGRICULTURE?

For many years, trends in U.S. agriculture have been toward greater technological advances, declining margins, declining numbers of farms, and increasingly larger farms.

--2,000 farms per week have gone out of business since 1950.

--9,000 farm residents per week relocated between 1960 and 1976.

--Average farm size increased from 175 acres in 1940 to 450 acres in 1979.

--2 percent of all farms control over 37 percent of the sales.

--Nonfarmers may own as much as 50 percent of the farmland.

--Of the people who own farm and ranchland, only 25 percent are classified by the Department of Agriculture as farmers.

The Nation has generally benefited from technological advances and growth in size, in that higher productivity has led to low and stable food prices. However, recent data have suggested that, if the trends continue unabated, the secondary impacts may well be a loss of farm sector resiliency, a decline in rural viability, a cutback in efforts to conserve our fertile soil, and less competition. Parity by itself is not a good indicator of secondary impacts.

WHAT WOULD BE THE IMPACT OF PARITY LEVEL PRICE SUPPORTS?

GAO tried to answer this question, but found that the evaluation and analytical techniques currently available would not paint a total picture. Not only is it not known what the secondary impacts would be, no one knows whether there would be more or fewer farmers or whether consumers would be better or worse off in the long run.

Consumers would pay more for food in the short-term and net farm income would rise. (See pp. 22 to 33.)

GAO concluded that the Congress and other policymakers need, in addition to parity, a broader framework to use in developing, analyzing, and evaluating farm policies and programs. The proposed framework GAO developed needs further refinement to flesh out the pertinent issues and sub-issues. The framework can be a starting point for the Department of Agriculture and others in setting up a systematic methodology for considering the impact of various policy alternatives.

Although some of these impacts are considered in setting policy today, GAO's proposal would help make sure that all major impacts are systematically considered in formulating and evaluating agricultural policy. GAO's conceptual framework recognizes that economics, social soundness, environment, and politics play overlapping roles in the process of determining a desired farm policy.

As part of this effort, GAO also discusses various factors that can be considered in better targeting Government programs. For example, a family farm could be a farming business in which:

--A family unit primarily owns, operates, and manages the unit and assumes all or most risks.

--A significant part of the labor is provided by the family.

--A significant part of family income is derived from the farm.

In addition, GAO distinguishes between various farm sizes to better focus policy debates.

--The largest 2 percent of farms control 37 percent of sales and 14 percent of the farmland.

--The smallest 52 percent of farms have 5 percent of sales and 23 percent of the land.

--The middle 46 percent control 58 percent of sales and 63 percent of the land. (See pp. 34 to 46.)

RECOMMENDATIONS

GAO recommends that the Secretary of Agriculture develop a comprehensive and systematic framework for the use of policymakers in formulating and evaluating various policy options for U.S. agriculture. (See p. 49.)

To assist the Secretary, GAO has suggested a framework (see p. 41), discussed factors to be considered in defining the target of Government programs (see p. 34), and has presented an overview of various possible governmental approaches to agricultural policy (see p. 36).

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At the Chairmen's request, GAO did not take the additional time needed to obtain written comments from the Department on this report, but did discuss its contents with Department officials. These officials wanted to study GAO's recommendation further before commenting.

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APPENDIX

V CRS Issue Brief: "Agriculture: Parity, Parity, Parity" by Leo Mayer, Senior Specialist, Agriculture. 72

ABBREVIATIONS

AAM	American Agricultural Movement
CBO	Congressional Budget Office
CRS	Congressional Research Service
EEC	European Economic Community
GAO	General Accounting Office
USDA	Department of Agriculture

CHAPTER 1

INTRODUCTION

In a February 27, 1979, letter, the Chairmen, Subcommittee on Family Farms, Rural Development, and Special Studies and Subcommittee on Domestic Marketing, Consumer Relations, and Nutrition, House Committee on Agriculture, requested us to evaluate the concept of parity prices for agricultural commodities and the impact, which parity-level price supports would have, particularly the secondary impacts, on the general economy, the farm sector, rural communities, and consumers. Subsequently, they requested us to expand the study to an evaluation of secondary impacts on world trade and economic development.

The letter stated that our study entitled "Changing Character and Structure of American Agriculture: An Overview" (CED-78-178, Sept. 26, 1978) had become a significant document for assessing the impact which farm policy has on the internal structure of U.S. agriculture and because the report already discussed the role which agriculture played in the whole economy, a further study of the secondary impact of higher price supports would be instructive for Members of the Congress as they drafted new farm legislation.

Our 1978 study mentioned parity, but only briefly. It described parity as a calculation which has been used to describe the relationship between prices farmers receive for their commodities and the prices they pay for production and living expenses. In theory, if all commodities were at full parity, farmers would have the equivalent purchasing power they had during a base period of 1910 to 1914 set by law.

Since 1933, parity has been used by the Government (1) as a barometer to measure the farm sectors well-being, (2) to establish certain price support levels, and (3) to limit production and encourage soil conservation efforts. The overall purpose was to maintain (1) economic security for the farm sector, (2) a stable food supply, (3) relatively low and stable consumer food prices, and (4) national security.

Although in 1973 the Government moved away from parity prices to target prices based on production costs for most commodities, the Department of Agriculture (USDA) still

is required by law to compute parity and to use that information in setting certain target prices. 1/

AGRICULTURE'S ROLE IN THE ECONOMY

Since 1933 when agriculture was experiencing a severe economic depression, the Government has tried to minimize adverse economic impacts on the agricultural sector because of its importance to our general economy. Historically, the Congress has encouraged a high level of agricultural production capacity, a viable family farm system of agriculture, and a competitive agricultural sector.

This Nation's agricultural economy has followed a classic developmental process. In the Nation's early days, farms generated most of the jobs and income opportunities. As the agricultural sector became more productive, through technological advances, fewer people were needed in agriculture production to meet food demand.

The following statistics show the extent of the food and agricultural system's current role in the general economy.

--Agriculture is one of the Nation's largest industries, with assets of $820 billion in 1979--equal to over 75 percent of the capital assets of all manufacturing corporations in the United States. The sale of food and fiber products exceeded $450 billion in retail value in 1979.

--Next to capital goods, agriculture is our largest single exporter with over $29.4 billion in 1978. In aggregate, the United States exports nearly 1 out of every 3 harvested acres. (See app. III.)

--The food and agricultural system is one of the country's largest employers, involving some 17 to 20 million people (approximately 1 out of every 5 workers) either directly or indirectly.

1/Parity is still used to set prices for milk and tobacco and certain commodities covered by marketing orders. In addition, when the executive branch directs that commercial export sales of a supported commodity be suspended due to short supply, that commodity must be supported at 90 percent parity. (See Food and Agriculture Act of 1977 (91 Stat. 950).)

--According to the Bureau of Labor Statistics, over the past 20 years, the rate of increase in farm workers' productivity has averaged 75 percent greater than that of manufacturing workers.

--Agricultural production itself accounts for only 3.5 percent of the total U.S. gross national product. However, when all food and agricultural support industries are included, the agricultural system component of gross national product is boosted to an estimated 25 percent.

--Farmers took in about $131.5 billion from the sale of their commodities in 1979, pumping back into the economy some $118.6 billion in direct production costs alone. (See app. II.)

--According to USDA, the farmer's share of the food dollar rose slightly in 1978; the first increase in 5 years. The average share received from each dollar spent on food in 1978 was approximately 39 cents, with the remainder going to the marketing spread (the middlemen); in other words, the cost of getting food from the farm to the consumer.

--Typically, from 67 to over 90 percent of the farmer's gross receipts go for direct production costs. That means that 25 to 35 cents of the farmer's 39 cents is paid out in costs of production, leaving the farmer with between 4 to 14 cents on the food dollar for personal items, income taxes, savings, and reinvestments, as well as retirement of the farm real estate debt.

OBJECTIVES, SCOPE, AND METHODOLOGY

At the Chairmen's request, we examined the parity concept and assessed how well parity tracked the well-being of the farm sector. We were unable to definitively assess the impacts of parity-level price supports on world trade and economic development, on the general economy, the farm sector, rural communities, or consumers because current evaluation techniques primarily measure short-term economic impacts, and do not consider secondary impacts such as impacts on rural viability, long-term impacts on retail prices, etc. There presently is not a good systematic framework for evaluating the total impacts of policy options such as raising support prices.

We, therefore decided to build on and update our earlier study of farm structure and develop a conceptual framework for formulating and evaluating policy alternatives on a broad range of factors. This was done by identifying farm problems and the underlying reasons for those problems.

We did not review the mathematical details of the parity formulas or the appropriateness of the calculations to accurately reflect farmers' income and expenses. A more detailed analysis of this type was done in our report, "Alternatives to Reduce Dairy Surpluses," (CED-80-88, July 21, 1980).

Our review consisted of interviewing agricultural and developmental economists and specialists; farmers; various farm and community support groups; and private and international research organizations. We also interviewed and obtained and analyzed data from officials at USDA; Agency for International Development, Department of State; Bureau of Census, Department of Commerce; Internal Revenue Service; Department of Labor; Federal Reserve Board; and the Farm Credit Administration. We also reviewed simulation models such as Chase and Data Resources Incorporated econometric models and research literature, legislation, and related documents, and publications concerning farm structural issues and agricultural price policy.

CHAPTER 2

PARITY: WHAT IS IT?

Parity has become the rallying point for many American farmers. Although the parity concept was developed nearly 50 years ago, the Congress as well as many farmers and farm support groups still rely on it as a barometer of the farm sector's economic well-being. There is, however, much confusion as to just what parity is and how it could or should be used. A balanced relationship between prices paid and prices received by farmers--a parity relationship--appeals to many. On the other hand, many economists do not believe that there should be any fixed relationship between such prices. They believe that the relative prices of all goods constantly change over time as demand and supply change due to such influences as changing income levels and technologies.

Regardless of these philosophical differences legislation has required use of price support programs to provide the Nation's farmers with some degree of economic security by attempting to minimize hardships on the farm sector when yearly surpluses develop. This chapter will first review the history of the parity concept and how it developed into a formula used by USDA to calculate prices for various commodities. The last part of the chapter will discuss the usefulness of the parity mechanism.

HISTORY OF AGRICULTURAL PARITY LEGISLATION 1/

During World War I, U.S. agriculture played a significant role in providing basic foodstuffs to U.S. allies. After the war, foreign demand for U.S. agricultural products diminished and the U.S. agricultural sector experienced a serious surplus problem. The problem was so serious it resulted in an agricultural depression. During the 1920s farm prices plunged and farm incomes declined. As a result, farmers cut back on purchases of all types of manufactured goods.

1/Most information presented here on the history of parity legislation is based on an issue brief by Dr. Leo Mayer, Senior Specialist (Agriculture), Congressional Research Service. (See app. V).

Particularly hard hit during the 1920s were farm machinery producers, who also had geared-up production during the war period. George N. Peek and Hugh S. Johnson, executives of the Moline Plow Company, saw the problem in simple terms--farm prices had dropped after the war but prices of manufactured items had not. Their solution was to rebuild farm purchasing power. Peek and Johnson became leaders in this movement and drafted a pamphlet entitled, "Equality for Agriculture," that outlined the problems caused by low farm prices and proposed a new concept to rebuild farm prices to a "fair" level.

The concept was developed more fully by USDA and drafted into proposed legislation in 1923. The bill, known as the McNary-Haugen Plan, defined "fair exchange" as that price that would bear the same relation to the general price level, taking inflation into consideration, as the price of a commodity during the period immediately before the war.

To illustrate, the prewar price of wheat was 98 cents per bushel when the wholesale price index, which measured the general price level, had a value of 100. By 1923 the wholesale price index stood at 156, and farm proponents argued that a "fair" price for wheat was 156 percent of 98 cents, or $1.53 per bushel. The actual price received by farmers for wheat in 1923 was 92 cents per bushel, or 60 percent of the "fair" price.

The McNary-Haugen Plan was considered by the Congress in each session between 1924 and 1928. It passed the Congress twice but was vetoed by the President. Its major contributions were the national debate it generated on agricultural issues and the mathematical formula it developed for measuring "fair" prices for agriculture.

By 1933 the depression had spread from agriculture to the general economy. These severe economic conditions created an environment favorable to passage of emergency farm legislation. The Agricultural Adjustment Act of 1933 (48 Stat. 32), enacted a "fair" farm price objective for corn, cotton, tobacco, and commodities categorized as naval stores.

The objective was to provide farmers with the same per unit purchasing power from the sale of their agricultural commodities as they had from the same commodities in the base period--1910-14. "Fair" selling prices were to be computed using the per unit sales price and the per unit retail costs

of production 1/ of the base period. The act required that "fair" selling prices reflect changes in the costs of production items at retail because it was determined that farmers bought production items at retail rather than wholesale.

In 1936, the Supreme Court in United States v. Butler, 297 U.S. 1 (1936) held that the 1933 act was an unconstitutional intrusion by the Congress into areas reserved to the States. Subsequent Supreme Court decisions from the same period effectively abandoned the reasoning of United States v. Butler. See Steward Machine Co. v. Davis, 301 U.S. 548 (1937) and Helvering v. Davis, 301 U.S. 619 (1937).

The Congress then passed the Soil Conservation and Domestic Allotment Act of 1936 (49 Stat. 1148) which provided for income support (parity income) instead of price support. An income support formula to implement this concept was never used because, when farm prices slumped in mid-1937, the Congress passed the Agricultural Marketing Act of 1937 (50 Stat. 246) which directed the Secretary of Agriculture to use a price standard

> "* * * that will give agricultural commodities a purchasing power with respect to articles which farmers buy, equivalent to the purchasing power of agricultural commodities in the base period."

The Agriculture Adjustment Act of 1938 (52 Stat. 31) was the first act to use and define the term parity. It said:

> "'Parity,' as applied to prices for any agricultural commodity, shall be that price for the commodity which will give to the commodity a purchasing power with respect to articles that farmers buy equivalent to the purchasing power of such commodity in the base period."

1/For a more detailed discussion of the costs of production included in the calculation see "The 1976 Revision of Agricultural Prices Indexes, Methodology and Procedures Used to Revise the Indexes of Prices Received by Farmers and Prices Paid by Farmers," by Fred C. Thorp, USDA, dated October 1978.

The 1938 act also provided the following formula for calculating parity-prices.

Average price received during the base period (1910-14)	x	Current value of prices paid index 1/ (1910-14 = 100)	= Current parity price

In theory, the price derived from this formula was the price a farmer should receive for a product if the purchasing power was to be maintained at the same level as the base period.

A series of laws enacted between 1941 and 1943 required USDA to support most agricultural commodities at 85 to 90 percent of parity during World War II and for 2-years thereafter. USDA was authorized to support prices through commodity loans, purchases, or other operations.

Although the formula provided by the 1938 act was easy to calculate, the prices paid index did not recognize differences in production costs for the different commodities because of the difficulties in isolating such costs. Each commodity's average price was multiplied by the same prices-paid number regardless of evolving market relationships or changes in productivity.

Because the formula did not reflect individual commodity production costs, some commodities, mainly crops for which technological change was raising yields, were supported at very favorable rates. The formula also did not recognize shifts in consumer demand away from certain commodities. Soon these commodities were being overproduced.

The problem remained until after World War II when the Agricultural Act of 1948 (62 Stat. 1248) revised the formula to make parity prices dependent on prices during the most recent 10-year period. The new formula accomplished this by integrating the base year 1910-14 price with a moving average price received by farmers for each commodity. "Moving average" was defined as the most recent 120-month average of prices received by farmers for a specific commodity.

1/The prices paid index is an index of the prices farmers pay for agricultural production and family living. The individual components of the index have been revised and expanded over the years to more closely reflect current farm and family expenditures.

The act required parity prices for farm products to be calculated using the following formula:

$$\frac{\text{Average price of commodity over the most recent 10-year period}}{\text{Average index (1910-1914 = 100) of prices received by farmers over the most recent 10-year period}} \times \text{Current month's index of prices paid by farmers (1910-1914 = 100)} = \text{Current month's parity price for specific commodity}$$

For example the parity price for corn in August 1980 is computed as follows:

Average price for 120 months ending December 1979 = $2.10
Average index of prices received 438
August 1980 index of prices paid 964

$$\frac{\$2.10}{438} \times 964 = \$4.62$$

The parity price for corn = $4.62/bushel

In the 1973 Agriculture and Consumer Protection Act (87 Stat. 221), parity prices were no longer used to determine the support prices for such commodities as food and feed grains, and upland cotton. Price supports for those commodities were based on target prices specified in law. These target prices were based on production costs.

However, calculations using the 1948 parity formula are still made once each month by USDA's Statistical Reporting Service and published in its periodical, "Agricultural Prices." They provide a base set of "fair" farm commodity prices for comparison with current market prices.

HOW IS PARITY USED?

There are generally three parity measures: parity prices, parity income, and parity ratio. When farmers ask for 100 percent parity they mean 100 percent of parity prices. When farmers, Congressmen, and policymakers say that farmers' commodities today buy only 60 percent of what they did in the base period, they are referring to the

parity ratio. When others say that farmers' incomes must be maintained at a parity level, they are probably talking about implementing programs based on parity income.

As discussed in the preceding section of this chapter, parity prices have historically formed the basis for Government agricultural support programs. There has been, however, some debate about whether the Government should use parity income rather than prices to ensure the viability of small farmers. Proponents of parity income say that programs based on prices have mainly benefited the larger producers. The parity income basis was once briefly required by legislation (see p. 7) but was not developed into a formula before the legislation was changed.

The third measure is the parity ratio which is used as overall indicator of the per unit purchasing power of farm commodities generally in terms of the goods and services currently bought by farmers, in relation to purchasing power of farm products in the 1910-14 base period.

In theory, assuming no changes in quantities produced, if the ratio moves below 100, a farmer has less purchasing power than in the base period. If the ratio moves above 100, the farmer has more purchasing power.

An example of how the ratio is computed follows. In August 1980, the prices received index (see table 1) for all farm products was 641 (1910-14 = 100) and the prices paid index (see table 2) was 964. The parity ratio was 66 as shown below.

$$\frac{641}{964} \times 100 = 66$$

In theory, if a farmer in August 1980 sold an equivalent amount as a farmer during the base period, today's farmer would have 66 percent as much purchasing power.

Each index provides a number that reflects how much the average price of items the farmer buys or prices received have increased or decreased since the base year. To illustrate, in table 1 the Prices Received Index for August 1980 of 641 means that the prices farmers receive, as shown in the table, have increased 541 percent since 1910-14.

TABLE 1

INDEX NUMBERS OF PRICES RECEIVED BY FARMERS, UNITED STATES, AUGUST 15, 1980, WITH COMPARISONS 1/

INDEX	1910-14=100					1967=100				
	AVERAGE JAN-DEC	1979		1980		1979		1980		
	1967	JUL	AUG	JUL	AUG	JUL	AUG	JUL	AUG
UNADJUSTED										
ALL FARM PRODUCTS	250	610	596	*617	641	244	238	*247	256
ALL CROPS	225	536	530	*544	559	238	236	*242	248
FOOD GRAINS	176	442	432	*443	448	251	245	252	255
FEED GRAINS & HAY	174	394	383	*423	449	226	220	*243	258
FEED GRAINS	172	388	374	411	438	226	217	239	255
COTTON	190	523	500	*611	590	275	263	*322	311
TOBACCO	555	1,103	1,153	1,204	1,204	199	208	217	217
OIL-BEARING CROPS	269	712	690	*658	677	265	257	*245	252
FRUIT	227	614	641	474	469	270	282	209	207
FRESH MARKET 1/	222	635	668	470	463	286	301	212	209
COMMERCIAL VEGETABLES	283	499	510	*514	531	176	180	*182	188
FRESH MARKET	334	627	648	*658	688	188	194	*197	206
POTATOES, ETC 2/	187	381	375	588	658	204	201	314	352
LIVESTOCK & PRODUCTS	275	686	665	*694	726	249	242	*252	264
MEAT ANIMALS	335	916	871	*894	941	273	260	*267	281
DAIRY PRODUCTS	308	709	734	*771	783	230	238	*250	254
POULTRY & EGGS	131	235	227	255	271	179	173	195	207
FOOD COMMODITIES						246	241	*246	256
SEASONALLY ADJUSTED									
FRESH MARKET FRUIT 1/	223	615	619	452	448	276	278	203	201
FRESH MARKET VEGETABLES	340	645	739	*684	786	190	217	*201	231
POTATOES, ETC 2/	187	316	354	473	611	169	189	253	327
DAIRY PRODUCTS	308	747	749	*811	799	243	243	*263	259
POULTRY & EGGS	131	236	225	253	272	180	172	193	208

1/ FRESH MARKET FOR NONCITRUS AND FRESH MARKET AND PROCESSING FOR CITRUS.
2/ INCLUDES SWEETPOTATOES AND DRY EDIBLE BEANS. * REVISED

USDA CURRENTLY COMPUTES AND PUBLISHES AN INDEX OF PRICES RECEIVED AND PAID USING 1967 AS THE BASE PERIOD. HOWEVER, THE PARITY-RATIO AS REQUIRED BY LAW IS STILL COMPUTED BASED ON THE 1910-14 PERIOD.

Source: Agricultural Prices, Crop Reporting Board, U.S. Department of Agriculture, August 29, 1980.

TABLE 2

INDEX NUMBERS OF PRICES PAID BY FARMERS, INTEREST, TAXES, AND WAGE RATES AND RELATED DATA, UNITED STATES, AUGUST 15, 1980, WITH COMPARISONS

INDEXES AND RATIOS	1910-14=100					1967=100				
	1979		1980			1979		1980		
	JUL 15	AUG 15	JUN 15	JUL 15	AUG 15	JUL 15	AUG 15	JUN 15	JUL 15	AUG 15
PRICES PAID BY FARMERS FOR COMMODITIES & SERVICES, INTEREST, TAXES, & WAGE RATES (PARITY INDEX 1910-14=100)	856	855	944	952	964	252	251	278	280	284
PRODUCTION ITEMS	728	723	784	792	807	251	249	270	273	278
FEED	461	451	457	*475	508	216	211	214	223	238
FEEDER LIVESTOCK	1,112	1,064	1,029	1,042	1,081	288	276	267	270	280
SEED	678	678	743	743	743	285	285	312	312	312
FERTILIZER	285	285	365	365	365	194	194	248	248	248
AGRICULTURAL CHEMICALS	419	419	507	507	507	151	151	183	183	183
FUELS & ENERGY	505	527	685	687	681	285	298	387	388	385
FARM & MOTOR SUPPLIES	512	517	590	*599	607	191	193	220	*224	227
AUTOS & TRUCKS	1,371	1,365	1,403	1,401	1,404	279	278	286	285	286
TRACTORS & SELF-PROPELLED MACHINERY	1,485	1,485	1,651	1,651	1,651	293	293	325	325	325
OTHER MACHINERY	1,352	1,352	1,510	1,510	1,510	297	297	332	332	332
BUILDING & FENCING	1,092	1,119	1,178	1,178	1,208	270	277	291	291	299
FARM SERVICES & CASH RENT	770	770	820	820	820	265	265	282	282	282
INTEREST 1/	2,438	2,438	3,052	3,052	3,052	501	501	627	627	627
TAXES 2/ 8/	1,918	1,918	2,070	2,070	2,070	226	226	244	244	244
WAGE RATES 3/	2,251	2,251	2,405	*2,443	2,443	266	266	284	*288	288
PRODUCTION ITEMS, INTEREST, TAXES, & WAGE RATES	937	931	1,022	*1,031	1,047	263	262	287	*290	294
FAMILY LIVING - CPI 4/	687	694	777	785	786	217	219	245	248	248
PRICES PAID - PRODUCTION ITEMS & FAMILY LIVING	732	731	801	809	820	243	243	266	269	272
PARITY RATIO 5/	71	70	61	65	66					
ADJUSTED PARITY RATIO (PRELIM) 6/	72	70	62	66	67					
PRODUCER PRICE INDEX 7/										
ALL COMMODITIES						237	238	265	270	
INDUSTRIAL COMMODITIES						237	240	273	276	
FARM PROD & PROC FOODS & FEEDS						232	227	234	246	

* REVISED. 1/ INTEREST PAYABLE PER ACRE ON FARM REAL ESTATE DEBT. 2/ FARM REAL ESTATE TAXES PAYABLE PER ACRE. 3/ SEASONALLY ADJUSTED, ANNUAL AVERAGE IS SIMPLE AVERAGE OF QUARTERLY INDEXES. 4/ BUREAU OF LABOR STATISTICS, CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS (CPI-U), FOR THE PREVIOUS MONTH. 5/ RATIO OF INDEX OF PRICES RECEIVED TO INDEX OF PRICES PAID, INTEREST, TAXES AND WAGE RATES. 6/ THE PRELIMINARY ADJUSTMENT FACTOR USED FOR COMPUTING THE ADJUSTED PARITY RATIO IS BASED ON ESTIMATED CASH RECEIPTS FROM MARKETINGS AND GOVERNMENT PAYMENTS. THE ADJUSTMENT FACTOR IS 101.4 FOR 1980 AND THE REVISED ADJUSTMENT FACTOR IS 101.0 FOR 1979. SEE PAGE 30, APR 1967 AGRICULTURAL PRICES, FOR A DESCRIPTION OF THE METHOD OF MAKING CURRENT ESTIMATES OF THE ADJUSTED PARITY RATIO. 7/ BUREAU OF LABOR STATISTICS INDEXES. 8/ PRELIMINARY.

SOURCE: Agricultural Prices, Crop Reporting Board, U.S. Department of Agriculture, August 29, 1980. Note to table 1 also applies here.

The parity ratio is widely used as a barometer of the well-being of the farm sector. Although relatively simple in concept, it is very complex to interpret. The questions that continually arise are what is the parity ratio telling us and is it a good indicator?

The parity ratio: What is it telling us?

USDA has been particularly critical of the usefulness of the parity ratio in making judgments about the farm sector. According to USDA, the parity ratio indicates per unit purchasing power of farm commodities in the base period and, as such, it is not a measure of farm income, farmers' total purchasing power, or farmers' welfare which depend on a number of factors other than price relationships. These other factors include changes in production efficiency and technology, quantities of farm products sold, and supplementary income from off-farm jobs and Federal support programs. Because it does not reflect quantities, the ratio--according to USDA--reflects only a "one sided view of revenues and costs."

In its 1977 edition of the Agricultural Food Policy Review, USDA presented a graph showing real net farm income trending upwards while the parity ratio was falling with some exceptions over the past 25 years. Table 3, taken from a Congressional Research Service issue brief (see app. V), seems to support USDA's judgment that trends in the ratio do not reflect trends in farm income or farm assets.

TABLE 3

ECONOMIC TRENDS IN AGRICULTURE

	Parity Ratio	Income Per Farm Family From Farming	All Sources	Net Assets Per Farm
1910-1914	100	$ 620	$ a/	$ a/
1915-1919	109	1,085	a/	a/
1920-1924	89	752	a/	a/
1925-1929	91	942	a/	a/
1930-1934	69	454	a/	a/
1935-1939	86	734	1,162	a/
1940-1944	100	1,440	2,109	9,073
1945-1949	109	2,500	3,473	18,796
1950-1954	98	2,683	3,955	27,796
1955-1959	83	2,637	4,097	38,010
1960-1964	79	3,128	5,801	51,345
1965-1969	76	4,162	8,692	72,989
1970-1974	78	7,457	14,605	109,495
1975	76	7,617	17,539	158,725
1976	71	7,712	18,798	180,725
1977	66	7,439	19,035	207,742
1978	71	10,036	22,865	306,961

a/Figures not available.

SOURCE: Congressional Research Services issue brief. (See app. V.)

On the basis of the above data one would conclude that although the trend in the parity ratio has been downward since 1950, other measures of the farm economy (income per farm and net assets per farm) have increased dramatically.

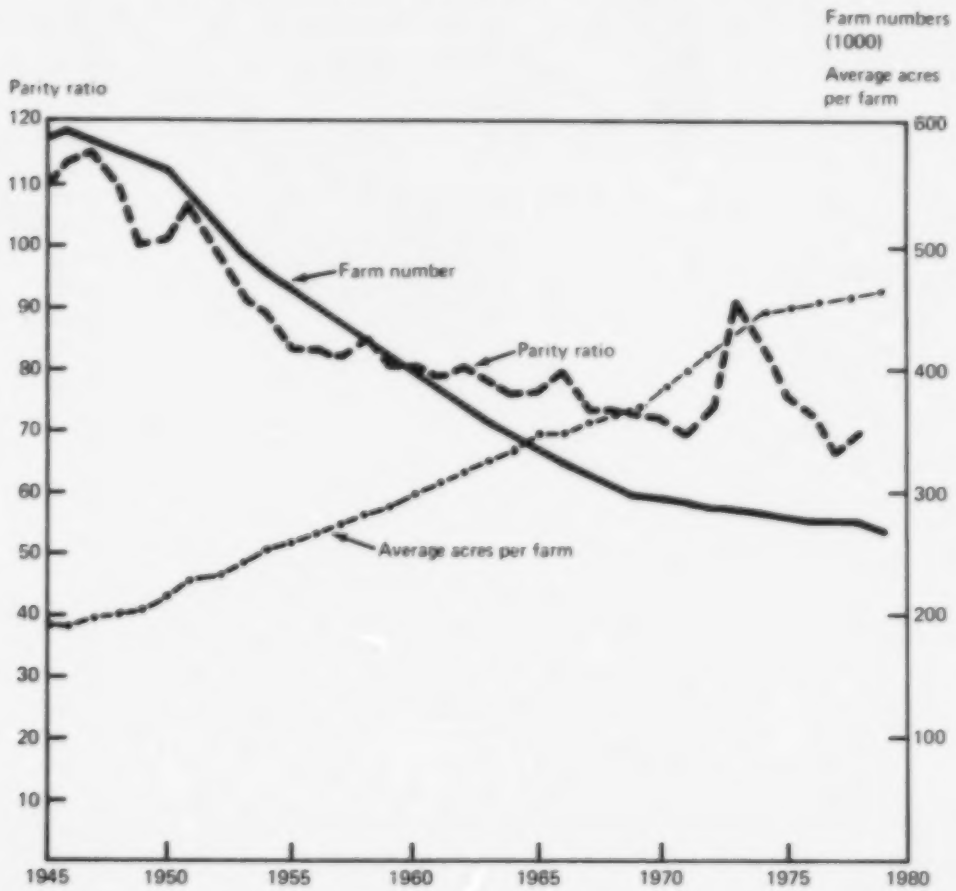
Based on our review, we concluded that the parity ratio by itself is not a very good indicator of the total well-being of the farm sector since total well-being is impacted by interactions outside the farm market environment. Changes or trends in the parity ratio, however, have been a fairly good barometer of certain aspects of economic well-being such as structural changes.

Price changes (either paid or received) are reflected by the movement of the parity ratio. A drop in the parity ratio would indicate less net margin per unit of production and an increase would reflect more net margin. As the net margin decreases, the pressure becomes greater for farmers to seek other income sources, increase production, or alter their production/marketing system. When the farmer has already maximized production on the existing land, a decision must be made to seek off-farm income, expand the land base, or go out of business.

Chart 1 contrasts the historical movement in the parity ratio and changes in farm numbers and farm size.

CHART 1

CHANGE IN TOTAL FARM NUMBERS, AVERAGE FARM SIZE AND THE PARITY RATIO



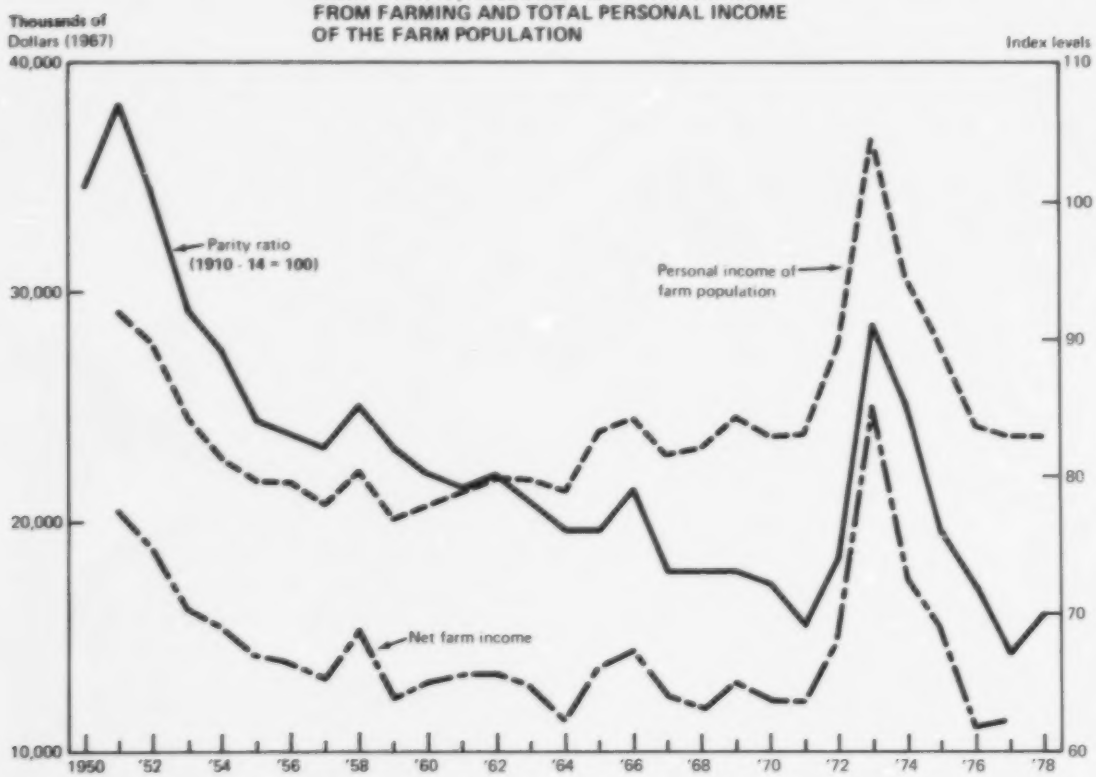
SOURCE: GAO ANALYSIS OF USDA AND US AGRICULTURAL CENSUS DATA

However, a word of caution: the parity ratio is a broad sector indicator that does not tell anything about an individual farmer's well-being nor the well-being of a particular industry within the agricultural sector. For example, when wheat and feed grains prices were at high levels in 1973 and 1974 and the overall parity ratio reached its highest levels since the early 1950s, cattle producers were experiencing extremely low returns caused by both overexpansion and high feed costs.

What USDA called "real net farm income" in its 1977 graph was actually total personal income of the farm population which includes off-farm income. Our data (see chart 2), which includes income only from marketing receipts adjusted to 1967 dollars, shows that the parity ratio has tracked net income from farming. This has occurred even though productivity has improved.

CHART 2

PARITY RATIO, ADJUSTED NET FARM INCOME FROM FARMING AND TOTAL PERSONAL INCOME OF THE FARM POPULATION



SOURCE: GAO ANALYSIS OF USDA DATA

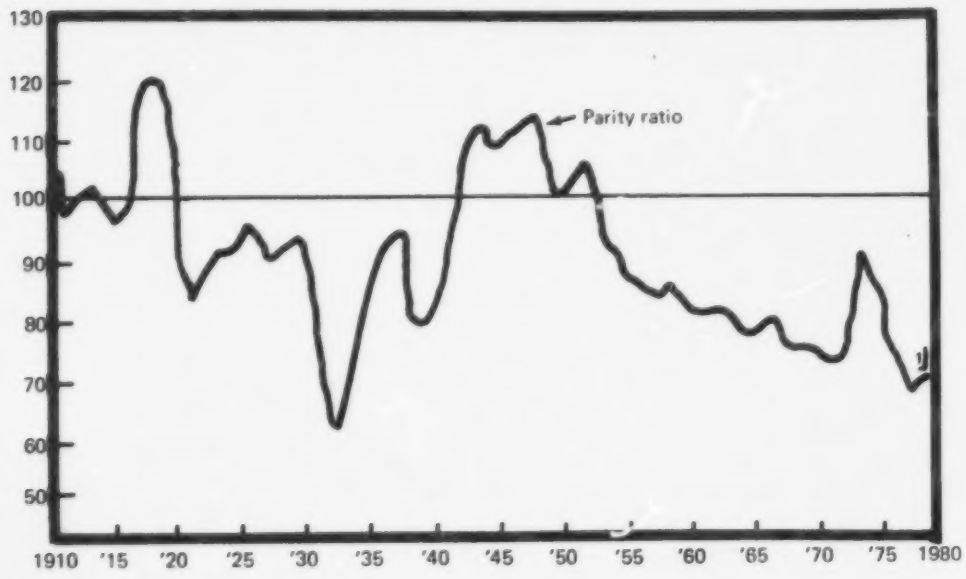
We also found that price changes (which are reflected in the movement of the parity ratio) do affect farmers' financial conditions. Thus, a drop in the parity ratio would indicate worsening conditions and an increase in the ratio would reflect improved conditions.

Since 1933 when the Federal Government first had the legal basis to support farm prices based on parity, the yearly average price of all farm products moved from a depression low of less than 60 percent of parity to levels near or above full parity between 1941 and 1953. Prices then generally fell steadily, except for the 1973-74 upswing spurred by higher grain prices, until bottoming out in 1977. The parity ratio had climbed to 85 in 1974 then fell to 66 in 1977, but by 1978 it had climbed back to 70. According to USDA, the August 1980 parity ratio fell to 66.

The following chart shows the movement of the parity ratio between 1910 and 1980. The parity ratio was high or rapidly increasing during periods of war or worldwide crop shortages.

CHART 3

VARIATION IN THE ANNUAL PARITY RATIO
FOR ALL FARM PRODUCTS



Source: USDA statistics

1/ August 1980 figure

Because the parity ratio is a measure of only prices and not quantities of inputs purchased or quantities of products sold, many have argued that as farms increase in size and take advantage of economies of scale, a comparison of the ratio in one time period cannot be made with that in another. This argument correctly assumes that the parity number does not completely account for improvements in productivity such as rising crop yields. The increase in crop yields through productivity responses has meant that for a given amount of purchased inputs, a greater amount of output is produced. Thus gross sales can increase (with prices received by farmers staying relatively constant or even decreasing) and even with higher input prices--i.e., a falling parity ratio--net return to the farm sector may be higher.

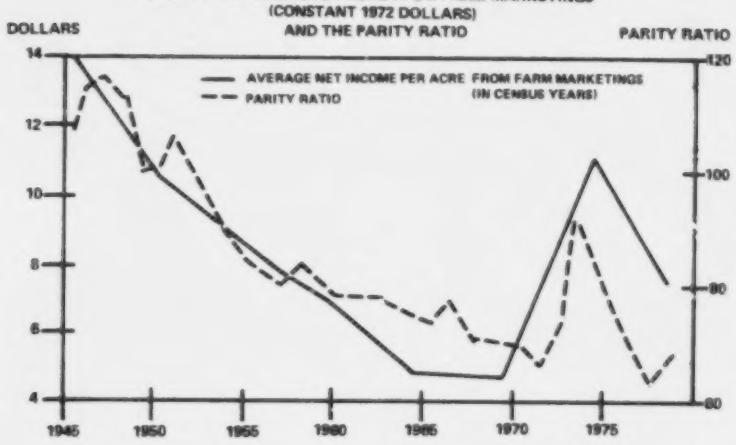
Whether the farmer is better off even though the parity ratio has fallen has not been determined. To gain some insight on this, one would have to know whether the farm sector is actually capturing all or part of the benefits both from getting larger (i.e., economies of scale) and being more productive (producing more outputs with less than an equal amount of inputs).

Increased productivity has created surpluses which have resulted in lower prices for the farmers. The following charts show (1) that the average net income per acre from marketing receipts has declined over most of the post World War II period indicating that on a per acre basis the sector as a whole has not captured the benefits of increased productivity through sales of commodities (see chart 4a); (2) that generally faced with declining per acre purchasing power (except for the 1974 peak), the remaining farms got bigger (see chart 4b); and (3) that the average net income per farm from marketing receipts of those remaining farms did not significantly improve except during the peak period of 1973-74 (see chart 4c).

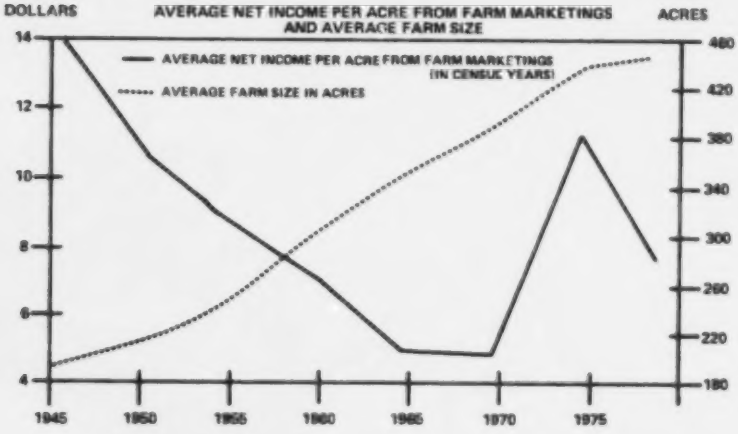
(a)

CHART 4

AVERAGE NET INCOME PER ACRE FROM FARM MARKETINGS
(CONSTANT 1972 DOLLARS)
AND THE PARITY RATIO

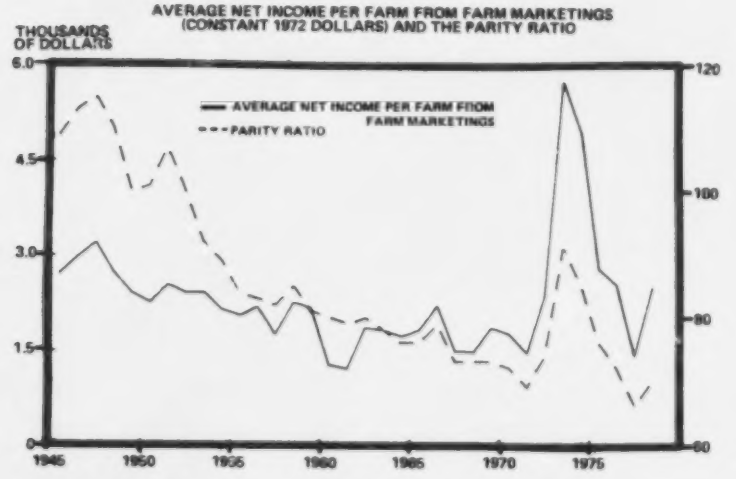


(b)



(c)

AVERAGE NET INCOME PER FARM FROM FARM MARKETINGS
(CONSTANT 1972 DOLLARS) AND THE PARITY RATIO



SOURCE: GAO ANALYSIS OF AGRICULTURAL CENSUS AND USDA, FARM INCOME SITUATION

On chart 5 we plotted the parity ratio against net farm income from marketing receipts using constant dollar values. Although a farmer's total economic status can be more accurately measured by total net income per farm family than by income from farm operations alone, our finding that there is a high degree of correlation between the parity ratio and net farm income from marketing receipts (using constant dollar values) is significant. While other measures of a farmer's economic status, such as total family income, including Government payments and nonfarm income, are important in assessing farm sector well-being, they mask what we feel is a primary factor affecting the size and number of farms; that is, the continuing effects of a cost-price squeeze on farmers of all sizes. The cost-price squeeze is the result of rising farm costs (i.e., seeds, labor, fertilizer, pesticides, machinery, fuel, interest, insurance, etc.) with a less than equal rise in prices of farm products. One reason for the decline in the prices of many farm products compared with the prices of farm inputs is the rapid technological gains experienced in the agricultural sector in the last 30 years.

In summary, the parity ratio does track:

--Structural changes.

--Changes in margin on a per unit basis.

--Net farm income from marketing receipts.

The ratio does not adequately reflect:

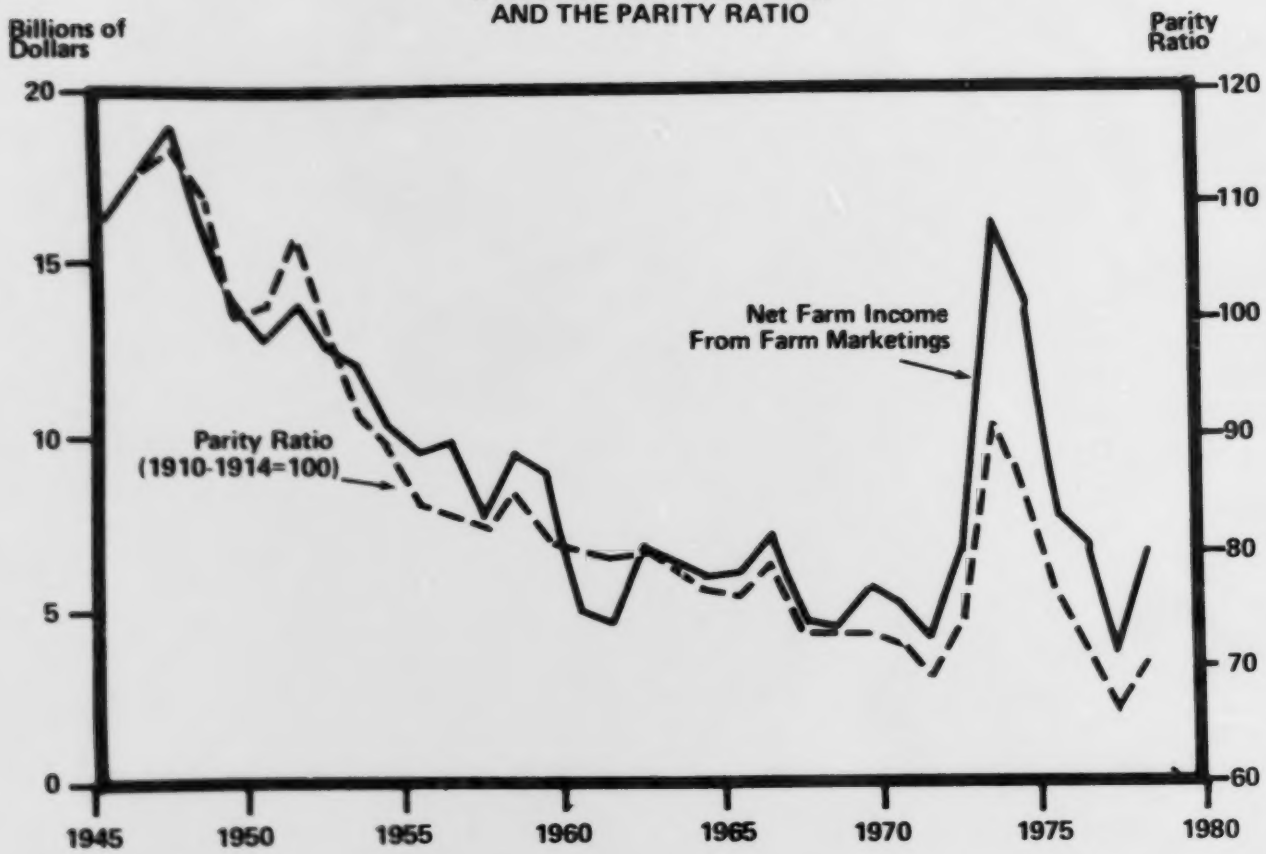
--Total farm sector well-being.

--Total personal income of the farm family.

--Increased asset/equities.

CHART 5

NET FARM INCOME FROM FARM MARKETINGS
(CONSTANT 1972 DOLLARS)
AND THE PARITY RATIO



SOURCE GAO ANALYSIS OF AGRICULTURAL STATISTICS
USDA, FARM INCOME SITUATION

CHAPTER 3

MAJOR TRENDS IN AGRICULTURE

The Chairmen asked us to evaluate the impacts, particularly secondary impacts, that parity-level price supports would have. At one time or another, the Government has supported commodities up to 90 percent of parity but never at 100 percent. At the 100-percent level, we know that food prices would rise, and so would farmers' income. (See app. IV.) What we do not know is what the secondary impacts would be on the family farm structure. Would there be fewer or more farmers? Would farms tend to be larger or smaller? Would rural communities be revitalized? Would the consumer be better off in the long run? These and other questions cannot be answered with the evaluation and analytical techniques currently available.

In this chapter, we identify some of the major trends in agriculture that have occurred at a time when the Government's policy was to foster the family farm system of agriculture through price-support programs linked to parity or, since 1973, to costs of production. 1/ Although Government programs contributed to developing and maintaining a stable food supply and low consumer prices, millions of family farmers have gone out of business and today fewer and larger farms dominate agricultural production.

The Nation has generally encouraged and benefited from technological advances and growth in farm size, but if the trend continues, farm sector resiliency, rural viability, soil conservation efforts, and the Nation's and the world's future stable food supply may suffer.

ECONOMIC FACTORS HAVE BEEN AN IMPORTANT FORCE IN THE TREND TO FEWER AND LARGER FARMS

Our 1978 study entitled "Changing Character and Structure of American Agriculture: An Overview" discussed the cause of the trend to fewer and larger farms and its effects on the agricultural sector and the Nation. We have briefly summarized some of the data from that study below. In some cases, we have updated the data previously presented.

1/In 1973, most Government price supports were linked to target prices. For a discussion of target prices see a staff working paper by the Congressional Budget Office entitled "Agricultural Price Support Programs: A Handbook," May 1980.

Since World War II farm structure has changed significantly. For example

--Since 1950, 2,000 farms per week have gone out of business.

--Almost 9,000 farm residents per week relocated between 1960 and 1976.

--Average farm size increased from 175 acres in 1940 to 450 acres in 1979.

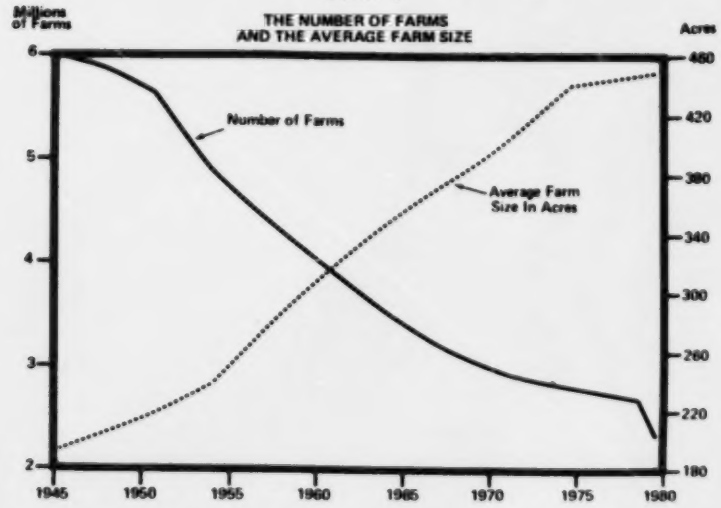
--The growth in farm size has led to crop specialization and sales concentration, and as of 1974, 2 percent of all farms had over 37 percent of the sales.

--The percentage of farmland owned by nonfarm operators could be as high as 50 percent.

--Of the people who own farm and ranchland, only 25 percent are classified by USDA as farmers.

With the pressures of the cost-price squeeze, aggressive farmers have expanded their output by buying out their neighbors, thereby increasing size and decreasing the number of farms. In the last 25 years, the number of farms was cut almost in half. Since 1960 alone, a 40-percent drop has been recorded. Chart 6 shows the dramatic change in the number of farms and the average change in farm size.

CHART 6



SOURCE GAO ANALYSIS OF AGRICULTURAL CENSUS
USDA FARM INCOME SITUATION

NOTE The sudden drop in the number of farms between 1978 and 1979 was a result of a change in definition.

USDA statistics show that farm numbers reached a high in 1935 with 6.8 million farms and then began a steady decline. The most recent Census statistics for 1974 1/ show the number of farms to be 2.34 million. It is very likely that as of 1980 the United States already has under 2 million farms. The most recent indicators show the trend continuing, but at a slower rate.

We recognize that farm size (number of acres) needed to form an economic unit will vary widely by geographical region, type of commodity produced, and level of technology used. Nevertheless, this trend has resulted in the smaller family farm capturing an increasingly smaller market share of total agricultural production. Although many factors affect why people choose to leave farming or buy larger farms, declining farm margins have been a major reason for the increase in farm size. Margin is the difference between what a farmer receives for a product and the costs to produce the product. 2/ If the margin decreases, net income can be maintained through increased volume. In the early 1950s, improved agricultural technology allowed the farmer to increase production. However, since the late 1960s, technological advances have slowed and farmers generally have not been able to produce significantly more per acre to offset the effects of rising costs. To maintain an acceptable level of income, farmers increased their farm size and/or altered their production/marketing systems, began increasingly to work off the farm, or left the farm.

As illustrated in tables 4 and 5, in recent years the cost-price squeeze has been quite evident. When the effects of inflation are taken into account, the average farmer's position is considerably worse. Using constant 1972 dollars, the real per acre average margin for wheat dropped from $47.70 per acre in 1974 to $21.20 per acre in 1979; a decline of about 56 percent. Table 5 shows how the per acre average margin for corn dropped from $89.66 per acre to $54.10 per acre during the same period, a drop of about 40 percent.

1/1974 Census data is the latest available.

2/See app. II from our analysis of USDA's reported net farm income.

Table 4

The Cost-Price Squeeze on the Average Wheat Farmer

Year	Average Per Bushel: Prices received	Production cost a/	Margin	Average Per Planted Acre: Bushels	Margin	Margin (1972 $)
1974 b/	$4.09	$2.04	$2.05	27.0	$ 55.35	$47.70
1975	3.56	2.36	1.20	28.5	34.20	26.90
1976	2.73	2.55	.18	27.1	4.87	3.66
1977	2.33	2.46	-.13	27.7	-3.60	-5.10
1978	2.98	2.48	.50	29.9	14.95	9.83
1979	3.82	2.74 c/	1.08	32.5 c/	35.10	21.20

Table 5

The Cost-Price Squeeze on the Average Corn Farmer

Year	Average Per Bushel: Prices received	Production cost a/	Margin	Average Per Planted Acre: Bushels	Margin	Margin (1972 $)
1974 b/	$3.02	$1.62	$1.40	74.3	$104.02	$89.66
1975	2.54	1.60	.94	85.7	80.56	63.36
1976	2.15	1.62	.53	87.1	46.16	34.66
1977	2.02	1.66	.36	88.8	31.97	22.56
1978	2.25	1.49	.76	100.5	76.38	50.23
1979	2.41	1.59 c/	.82	109.2 c/	89.54	54.10

a/Excludes land value costs. (See annual committee print entitled "Costs of Producing Selected Crops In The United States," prepared by Economics, Statistics, and Cooperative Service, USDA, and published by the Committee on Agriculture, Nutrition, and Forestry, U.S. Senate.)

b/1974 was the earliest year reasonably comparable cost-of-production figures were available from USDA. Also, only data on harvested acres was available for 1974.

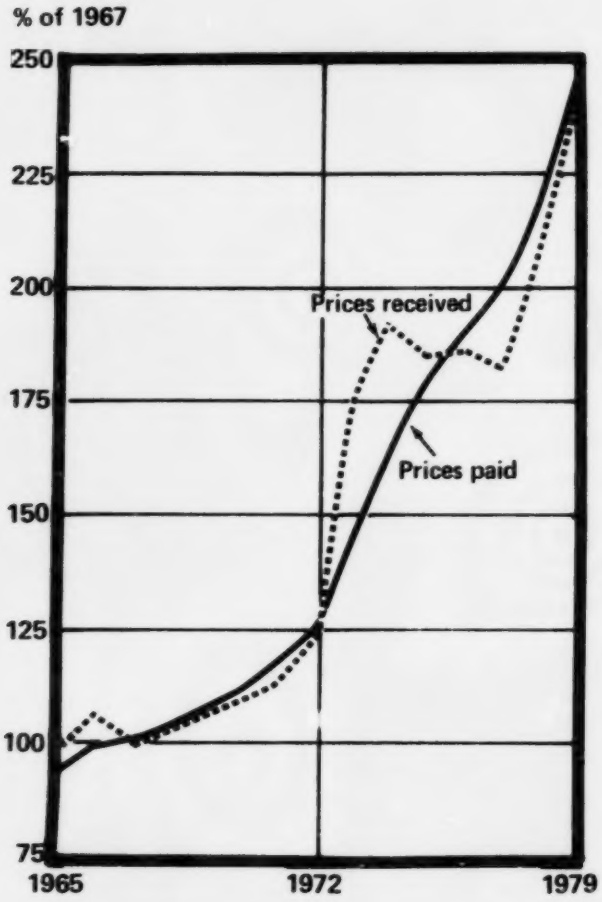
c/USDA preliminary figures.

We recognize that 1974 was an unusual year in that farmers' margins were among the highest in the last 25 years. Nevertheless, the magnitude of the declines since then does illustrate the financial plight of farmers--1977 was probably the worst year for farmers since the depression.

The sporadic nature of the cost-price squeeze is illustrated by chart 7 which shows the increases in price paid by farmers and the prices received for their products since 1965. The table is not crop specific--it represents all agricultural products.

CHART 7

PRICES RECEIVED AND PAID BY FARMERS [a]



[a] Prices paid includes commodities and services, interest, taxes, and wage rates.

SOURCE: FARM CREDIT ADMINISTRATION, AGRICULTURE AND CREDIT OUTLOOK ,PUBLISHED 1980.

Because of the uncertainty of short-term demand and a desire to maintain our agricultural capacity at a high level, the Government has attempted to stabilize prices through support programs. These programs functioned as short-term buffers and were not geared toward longer-term problems.

Because of the extended periods of depressed prices and rising costs, farmers increasingly have had to borrow to plant their crops and to maintain a reasonable standard of living. 1/ Increased farm debt has significantly increased the financial risk farmers take to remain in business.

The decreasing margins and the need to incur increasing debt to purchase land and plant crops may discourage potential farmers. The following example illustrates the potential bind an entry farmer would have faced in 1979, had he or she purchased farmland and financed most of the purchase price at a new loan interest rate of about 9 percent, the average interest charged on new loans by Federal Land Banks and Farmers Home Administration for farm real estate loans.

--The farmer buys a 200-acre corn farm for $300,000 ($1,500 per acre).

--The farmer places a mortgage of $228,000 on the farm for a debt-to-purchase ratio of 76 percent ($228,000 to $300,000).

--The per acre farmland debt is $1,140: $228,000 mortgage divided by 200 acres. The debt service is about $22,024 per year for principal and interest: $110.12 per acre per year. (This assumes a 9-percent rate of interest over 30 years. Loan periods can range up to 40 years.)

--The farmer produces 109 bushels of corn per acre and sells it for $2.41 per bushel for cash receipts of about $263 per acre. (See table 5, p. 25, 1979 prices.)

--The ratio of farmland debt (principal and interest) to cash receipts equals about 42 percent: $22,024 ($110.12 per acre x 200 acres) to $52,600 ($263 per acre x 200 acres). In other words, 42 percent of cash receipts is needed to cover real estate debt until paid.

1/See appendix I for a discussion of the economic problems farmers face.

--Production costs are $1.59 per bushel for corn, or about $173 per acre.

--The farmer's net income before real estate debt is $90 per acre: cash receipts of $236 per acre less production costs of $173 per acre.

--After paying real estate debt, the average entry-level farmer would have a net operating loss of about $20 an acre in 1979.

This example shows the difficulty of a new farmer operating a corn farm based on the most recent available data on average margins for corn farmers. It is not feasible for new entry-level farmers to operate corn farms unless they have a large downpayment or unless they have other sources of income. Although we recognize that individual farmers' equity situations vary considerably across the farm sector by age, duration and type of farming, and the degree of importance the operators place on actual ownership of the land, situations like this example, multiplied across the country, may cause agriculture to become a closed system with few or no new entrants. However, if farmland and ranchland values continue to rise, there would still be major incentives for new entrants--the expectation of potentially high capital gains from land appreciation.

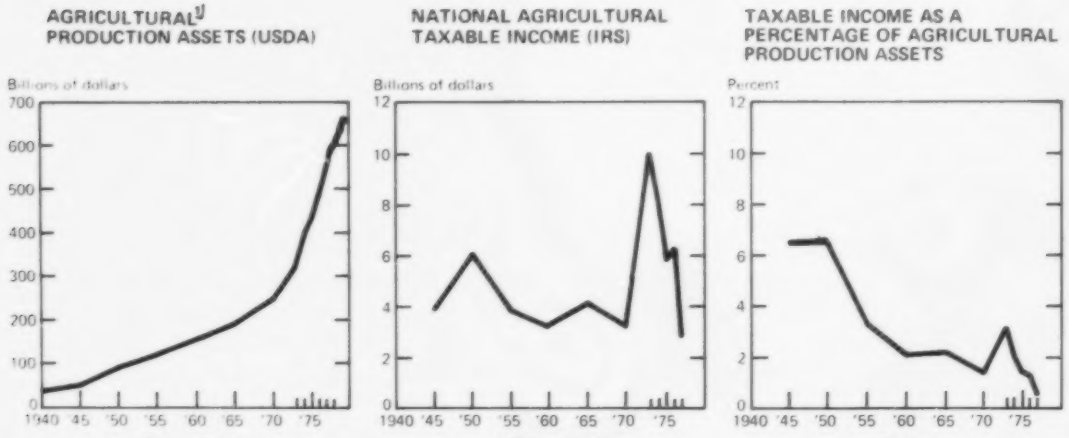
Recent developments in the economy further emphasize the financial stress on the farm sector and have been the cause for increased concern about its financial viability. Energy costs have increased substantially. Also, in the above example, a 9-percent interest rate was assumed; however, the Federal Land Banks, which finance over one-third of all farm real estate and lend money at variable rates, were charging an average interest rate of about 10.35 percent on new loans for farm real estate as of September 1, 1980. In addition, the Farmers Home Administration which finances about 6 percent of all farm real estate is currently charging an 11-percent fixed rate.

On a national basis the value of assets, both land and equipment, devoted to agriculture has increased substantially since World War II while taxable income has remained fairly constant. National agricultural taxable income as a percentage of total agricultural production assets has declined from over 7.8 percent in 1945 to under 1 percent in 1977. Our analysis of Internal Revenue Service data shows that in 1945 the agricultural sector had a taxable income of under $4 billion on national production assets worth approximately $50 billion. Ten years later production

assets had more than doubled, yet taxable income was still under $4 billion. By 1977, assets had grown to $550 billion, yet preliminary Internal Revenue Service figures indicate that actual taxable income probably declined by nearly $1 billion dollars. While taxable farm income peaked in 1973 and 1974 at $10 billion and $8 billion, respectively, it was $6 billion in 1947. These figures have not been adjusted for inflation.

The following chart shows the percentage of national taxable income compared to total national agricultural assets since World War II. Our assessment of this chart leads us to question whether the solution to the farm problem of cash-flow can be achieved through additional tax relief efforts.

CHART 8



	Billion of dollars	Billion of dollars	Percent
1940	36.7	NA	--
1945	60.4	3.915	6.48
1950	89.8	6.07 (1947)	6.76**
1955	120.8	3.915 (1953)	3.24**
1960	159.9	3.258	2.03
1965	192.3	4.154	2.16
1970	248.1	3.274	1.32
1973	306.6	10.071	3.28
1974	371.9	8.156	2.19
1975	424.2	5.9	1.39
1976	481.9	6.2	1.29
1977	555.7	2.8*	.50
1978	603.5	NA	--
1979	683.8	NA	--

* Preliminary estimate using IRS data

** Based upon 1947 & 1953's taxable income

[1] Includes real estate and farm equipment

SOURCE GAO ANALYSIS OF USDA BALANCE SHEET OF FARMING SECTION 1979 AND IRS DATA

FACTORS AFFECTED BY NARROWING MARGINS AND CHANGES IN FARM STRUCTURE

Although most agricultural studies historically have not been broad enough in scope to fully evaluate the effects of narrowing margins on farm sector resiliency, efficiency, rural viability, soil conservation, and competition, some recent data indicate that such effects could be adverse.

Resiliency

We define resiliency as the farm sector's ability to absorb shocks of economic adversity and continue to produce during economic crises. Generally, farmers who have high equity and supply most or all of the labor and who are less dependent upon nonrenewable purchased resources are more resilient. Farmers who have large debts, who must depend on hired help for much of the labor, and who do not have off-farm income are less resilient.

According to Dr. Paul Barkley, Agricultural Economist, Washington State University, smaller farmers 1/ have considerable staying power during times when prices are depressed or costs are high. This is so because small- to mid-size-volume farmers typically do not pay themselves or their families minimum wages, and their equity is often high. On a relative basis, their cash expenditures are substantially lower than those of the larger farms. A greater proportion of the smaller volume farm's labor is provided by family members and thus, in adverse periods, labor costs are not as significant a factor in the decision to produce or not to produce. Once crops are in the ground, the cash expenditures to continue the process until harvest are normally low. Maintaining a basic subsistence level for their families is the farmers' incentive to maintain output, even if prices fall to very low levels. Consequently, even though smaller volume farmers may suffer financial crises, historically they continue production.

Dr. Barkley believes that because smaller volume farmers are able to produce in adverse economic times with minimal cash outlay, they have become a shock absorber for the farm sector and contribute to this Nation's stable food supply.

1/See page 34. We use the term "smaller farmer" to mean the 46 percent of farms which have 58 percent of the sales volume. These farms fall between the top 2 percent which have 37 percent of the sales volume and the bottom 52 percent which have 5 percent of the sales volume.

If this rationale is correct it emphasizes the importance of maintaining a certain number of smaller volume farms as a component of our food production system.

Efficiency

In many instances, larger organizations can be more efficient and consequently provide goods and services at lower costs because of "economies of scale" or "economies of mass production." These economies result from technological advances which often cause the per unit cost of production to fall as the level of output rises and from the ability of large organizations to buy in bulk and thereby pay less per unit of input. Cooperatives provide a way for smaller organizations to band together to take advantage of some of the economies.

Recent studies, however, are beginning to question whether additional economies of scale remain to be captured by the Nation's larger volume farms. They suggest that once farms expand to a certain point, further expansion does not reduce per unit costs of production. If this is the case, then further expansion may not result in more economic efficiency. Further study is needed of the extent of economies of scale in agriculture.

Rural viability

A comparison of most rural areas outside the periphery of urban development as they were 20 years ago and as they are today would probably show an almost universal decline in rural vitality. The rural economy depends largely on farm volume and farm population. Although the trend to fewer and larger farms does not necessarily reduce the volume produced and therefore the need for storage and transportation facilities, some studies have shown that it has increased the number of owners who do not operate the farm on a day-to-day basis. The studies suggest that these owners do not take as active a role in community affairs as would a family farmer, and they frequently do not live in the farm community--taking the revenues from the farm or rent from the land outside the area rather than spending it in the farm community.

Another event that has paralleled the trend to fewer and larger farms has been the outmigration of farm people from rural areas. Young people aged 16 to 25, especially high school graduates and females, have moved out in large numbers.

According to some studies, one result of fewer people living on farms is erosion of rural communities' tax bases (see page 41).

Less tax dollars for rural areas has caused a reduction in the quality of schools, roads, and other basic services. The studies suggest that as communities continue to deteriorate, outmigration of the young to other areas for a better quality of life will continue. Consequently, churches, stores, and other signs of rural vitality begin to deteriorate or disappear. As a result, rural communities begin to lose those characteristics that make them viable.

A decline in rural viability can occur in another fashion: urban pressure especially in the more metropolitan counties. Urban pressure on rural communities can be manifested in many ways--development pressures, rising taxes, departure of agri-support industries, loss of political influence, laws that inhibit certain agricultural practices, rising labor costs in the face of urban employment opportunities, and land speculation. These pressures are likely to become more significant in the future, especially since approximately one-fifth of America's agricultural sales volume comes from these metropolitan counties.

Soil conservation

Various studies have expressed concern about the effects on our soil base of farmers trying to offset narrowing margins by getting larger and using more advanced technology. A new generation of powerful tractors is now available to cultivate, quickly and efficiently, large cleared areas. Also, some of the new irrigation systems need large cleared areas to work. As a result, use of soil conservation methodologies, such as contour plowing, use of trees as windbreaks, and proper water drainage have declined.

A second concern is that the farmers who did not expand and the new farmers may not have sufficient resources to carry out soil conservation measures.

Protection of our topsoil is a key to continued production of a stable food supply. Our report entitled "To Protect Tomorrow's Food Supply, Soil Conservation Needs Priority Attention" (CED-77-30, Feb. 14, 1977) stated that

> "Soil scientists estimate that to maintain productivity over time, annual soil losses must be limited to no more than 5 tons per acre in deep soils and 1 ton per acre in shallow soils. Some soil scientists contend that it takes nature over 250 years to create an inch of topsoil; others say it takes 100 years. In either case, it is a very long time.

* * * *

"* * * about 84 percent of the [283] farmers in our sample had estimated annual soil losses of more than 5 tons of soil an acre annually."

A decline in use of soil conservation techniques probably contributed to this situation.

Competition

An unrestricted trend to increased concentration in farming could reduce competition in agriculture. With less competition, food prices could rise and food quality could decline.

CHAPTER 4

A PROPOSED ANALYTICAL FRAMEWORK FOR FORMULATING AND EVALUATING FARM POLICIES AND PROGRAMS

Many views have emerged about potential changes in the social well-being and national welfare of our country if the trend toward larger farms continues and the influence of smaller family farms declines as they come to represent a smaller percentage of the market. Some believe that current farm programs are best for the Nation because they encourage efficient, large-scale production of high quality food even though there is a limit on the support payments made to individual farmers. Others argue that current Government-supported agricultural programs must be altered if economic, social, and national well-being factors are to be maintained.

As discussed in chapter 2, parity by itself has not been a good indicator or barometer of the farm sector's total well-being, although it does track certain aspects of economic well-being. In addition to parity, the Congress and other policymakers need a broader yardstick or framework to use in developing, analyzing, and evaluating farm policies and programs. Thus, we developed a proposed analytical framework or model for the Congress to consider when determining Government program goals for the agricultural sector. This chapter discusses the issues involved in the farm policy debate and presents our proposed analytical framework.

TARGETING AGRICULTURAL POLICY

Over the years, the Congress has consistently reaffirmed the national policy of maintaining and fostering the family farm system of agriculture. Who the family farmer is and what size farm should be the target of Government programs have not been spelled out, but should be if the Government is to make the most effective use of its resources.

There has been much debate about whether any corporation or partnership can or should be considered a family farm. 1/ In our 1978 study of farm structure, we found that family farmers did operate under a variety of organizational

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1/For a detailed discussion of corporate farming, see the Congressional Budget Office staff working paper entitled "Corporations in Farming" by Peter M. Emerson, February 1980.

structures and that whether a farm was operated by a corporation, partnership, or sole proprietor was not as important for policy formulation as other factors.

We suggest that the following factors be considered in defining family farms.

--A farming business that is primarily owned, operated, and managed by a family unit which assumes all or most risks. (This would not exclude a farm family that operates and manages rented land.)

--A significant proportion of the labor, except during peak periods, is provided by the family. (This implies that farm size and technology would be scaled to fit a family unit.)

--A significant proportion of the family's income is derived from the farm. (This would not exclude family members from earning some off-farm income.)

For discussion purposes, we also suggest the following three distinctions between farm classes (based on 1974 Census of Agriculture Statistics):

--The top 2 percent of total farms, which have 37 percent of the sales volume and control 14 percent of the land.

--The bottom 52 percent of total farms, which have 5 percent of the sales volume and control 23 percent of the land.

--The residual 46 percent of total farms, which have 58 percent of the sales volume and 63 percent of the farm land.

Using such distinctions can be very helpful in developing a strategy to target Government programs. For example, if the Government wanted to partially alleviate the cost-price squeeze in the short-term so farmers would not have to expand to maintain purchasing power, it could support prices. However, attempting to raise the relative well-being of the bottom half of all farmers--who now have only 5 percent of the gross farm sales--through price supports might require a price level so high as to be unacceptable for the Nation. On the other hand, price supports with no upper-volume limit could encourage farms to expand. However, price supports could be developed to maintain and stabilize production primarily for those 46 percent of the farms that have 58

percent of the sales and 63 percent of the land. The largest farms could receive supports up to a certain dollar or volume limit, but the smallest farms may need some additional developmental assistance.

DEBATE OVER THE DIRECTION OF NEW FARM POLICIES

Debate over the direction of farm policies has centered on four basic approaches: status quo, laissez faire, adaptive and farm preservation.

The status quo approach, assuming current market forces, would result in a continuation of current trends, although this may not be the explicit intent of current Government programs. A side effect of this approach is the removal of farmers and farmland from the agricultural sector. Proponents of this philosophy believe that ultimately a sufficient agricultural base will be preserved, that food will be less expensive, and that the general economy will be better off with fewer and more efficient, larger farms.

The laissez faire approach would be characterized by little or no Government intervention and would result in supply and demand factors determining the structure and size of the agricultural sector. The most likely short-term effect would be acceleration of the trend toward fewer and larger farms, which might eventually have more control over prices.

The adaptive approach, a variation of the laissez faire approach, would facilitate and promote the movement of labor away from the farm and into other fields of endeavor. In 1962 the Committee for Economic Development advocated this approach. It believed that the agricultural industry was using too many resources and that fewer, more efficient, expanding farmers would result in an increase in productivity. This philosophy is still being advocated by some policymakers.

The farm preservation approach would call for refinement in Government policies and programs so that programs can be targeted to specific types of farms. Proponents of this approach feel that smaller volume farmers should be preserved primarily because of social or national well-being reasons and/or that the smaller volume producer is or can be a viable economic unit if an appropriate mix of Government policies is developed and implemented.

The debate on the direction of farm policy centers on three basic questions:

--What is the optimal structure for the agricultural sector?

--How much economic security should be provided to the agricultural sector?

--What type of support philosophy should be incorporated in farm programs to provide economic security?

The answers to those questions will determine which of the four broad approaches the Government should take.

What is the optimal structure for the agricultural sector?

A desired structure of the agricultural sector should be determined to provide a foundation for the Nation's agricultural policy. If no decision is made, structure will still continue to evolve but in a way that may not be in the Nation's best interest.

The public debate over the optimal structure for the agricultural sector has two extremes:

Pure economic forces should be allowed to determine the relative size and structure of the agricultural sector.	vs.	Pure economic forces are inadequate to determine the desired structure of agriculture. Effects that changes in the agricultural sector have on the Nation's social fabric and on the international community must be considered in developing farm policy.

Those subscribing to traditional economic theory are proponents of the pure economic force concept. Opponents believe that this concept is inadequate because it ignores the secondary impacts of trends in our agricultural sector. They believe also that a move to fewer and larger farms has immediate adverse effects on the quality of life and the relative size of the population in rural areas.

How much economic security should be provided?

The decision about desired agricultural sector size and structure and how quickly to achieve it would be a major determinant of how much economic security, if any, should be provided to farmers. Also, if a laissez faire policy is chosen, then Government support of the agricultural sector should be near zero. But if the farm preservation approach is chosen, Government programs would be needed.

What philosophy should be incorporated into programs to provide economic security?

Proponents of farm support programs historically have differed over the philosophy that should be used to provide that support. The two most prominent philosophies are that the farmer should (1) be provided with an overall guaranteed income level and (2) only be guaranteed a certain price on each unit of production.

This conflict of philosophies has direct implications on present and future farm policy emphasis. Would farm problems best be solved through a price-support program or through income maintenance?

The primary difference between these concepts is that price supports guarantee the farmer neither a specific return on labor and investment nor a base income level. If an appropriate margin is considered in setting the price level, it then is up to the farmer to combine various farming techniques, cropping systems, and technology in the most profitable way. Under income maintenance programs there would be little or no built-in incentive to produce efficiently.

Historically, U.S. agricultural policy as well as farmers' demands have tended to be centered around price. According to Kenneth Boulding, Professor of Economics, University of Colorado, a depression hits the industrial worker in the form of unemployment, rather than in the form of low wages, this makes the industrial worker "job conscious." On the other hand, a depression (or recession) hits the farmer in the form of low prices for products, not in the form of unemployment. Therefore, the farmer tends to see the problem in terms of low prices and this is another reason why policies and programs based on price have had such appeal.

Price-support programs, however, have been criticized because there is an incentive to produce as much as possible to receive the highest possible return, thereby encouraging farmers to increase farm size. A second criticism is that price policy is an extremely ineffective means of tackling the problem of poverty in agriculture; that is, to assist the smallest farmers, a lot of money would be spent on large farmers.

The incentive to expand could be offset somewhat if the pricing program set some upper volume limits on production, e.g., production over a certain volume would not be supported. With regard to poverty in agriculture, we do not think that agricultural policy should primarily focus on this problem. In our opinion, poverty, although it may be a consideration in formulating agricultural policy, is more appropriately addressed by other Federal policies and programs whose main focus is, for example, income security.

FEW STUDIES HAVE ADDRESSED SECONDARY IMPACTS

In March 1979 1/ the Secretary of Agriculture stated "we really don't have a workable policy on the 'structure of agriculture.'" He emphasized the need to stop the decline in the number of American farms and questioned whether current programs have worked to the advantage of the small- and medium-size farmer. He suggested that we need to look beyond traditional solutions to farm problems, which have not worked effectively, to a new approach. He also questioned whether our present farm policy decisions are in the Nation's best long-term interests. The Secretary has recently initiated a review of farm structure changes to be used as a basis to develop new approaches to farm structure issues.

Few studies have been done to identify and quantify secondary impacts on our society caused by agricultural policy, and it is therefore difficult to determine a desirable agricultural structure. To date, most analytical studies of the agricultural sector have focused almost exclusively on financial analyses of farms by size and principal enterprise. They talk in terms of costs of production, return on investments, economies of size, and

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1/Remarks prepared for delivery by Secretary of Agriculture, Bob Bergland, before the National Farmers Union Convention, Kansas City, Missouri, March 12, 1979.

resource use for profit maximization. Primarily these studies are microeconomic, or financial analyses of individual farms.

Fewer studies have tried to assess the impact of alternative farm structures at local, regional, national, or world levels. Most macroeconomic analytical techniques focus almost exclusively on aggregated statistics at the national and international levels, and therefore do not provide the policymaker with linkages to local and regional economies. One exception is a study done by Heady and Sonka 1/ at Iowa State University. The study used a national programing model to evaluate effects of various farm structures.

One objective of the Iowa State study was to estimate the potential effects of alternative farm structures on income generated in agriculturally related communities and industries. These off-farm impacts of agricultural production are important to a large segment of the Nation, since over one-fourth of the U.S. population resides in nonmetropolitan areas.

Also a 1944 case study done by Dr. Walter Goldschmidt 2/ and a 1977 followup by Isao Fujimoto of two farming communities in California looked at the effects of farm structure on the volume of retail trade in a community; the number of independent businesses; and the kind of physical facilities and public services as well as social, civic, and religious organizations.

Although many of these factors cannot be quantitatively evaluated, sociologists and some welfare economists have attempted to show the linkages and intangible benefits of alternative farm organizations. Dr. Richard Rodefeld and others have shown that with the growth of larger farms comes an altered farm workforce and community class

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1/"Income and Structure of American Agriculture Under Future Alternatives of Farm Size, Policies, and Exports" Card Report #53, Iowa State University, Ames, Iowa, 1975.

2/"Obstacles to Strengthening the Family Farm System." Summary presented as testimony by Dr. Walter Goldschmidt pp. 387-404 before Subcommittee on Family Farms, Rural Development and Special Studies, House Committee on Agriculture, Oct. 29, 1977.

structure. For example, Dr. Rodefeld's analysis 1/ indicates that an industrial-type farm structure shows lower levels of job and residential stability, income, wealth, standard of living, membership in community voluntary organizations, and percentage of farm items purchased locally.

Political development economists emphasize the need to broaden assessments of economic well-being to include other disciplines. One example of political economics and how it fits both agriculture and rural development is land economics. According to Dr. Raleigh Barlowe, 2/ land economics deal with man's economic use of the surface resources of the earth and how the physical, biological, economic, and institutional factors affect those resources.

Land economists frequently find it necessary to use concepts developed by the other social sciences and related disciplines. For example, the land economist might need to use tools that come from history, law, agricultural science, political science, sociology, psychology, geography, soil scientology, engineering, forestry, geology, and developmental planning architecture. It is from this broader perspective that some analysts are now assessing the consequences of decline in the number of family farms over the past 35 years. Continued and more comprehensive analyses of this type should go a long way toward evaluating the impacts of agricultural policy on other elements of domestic and world society.

PROPOSAL FOR A NEW POLICY FORMULATION AND EVALUATION SYSTEM

Our analysis of farm policy led us to conclude that many factors should be integrated into policy decisions. Some of these factors are considered in setting policy today but not on a systematic or comprehensive basis. Sociology, physical and institutional environment, technology, and national security should be considered along

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1/Richard D. Rodefeld, "The Family-Type Farm and Structure Differentiation: Trends, Causes, and Consequences of Change, Research Needs," staff paper 24, July 1979, College of Agriculture, Pennsylvania State University.

2/"Land Resource Economics: The Political Economy of Rural and Urban Local Use," Raleigh Barlowe, p. 3, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1958.

with economic efficiency on a more systematic and comprehensive basis in formulating and assessing agricultural policies.

Therefore, we developed a conceptual framework for agricultural policy analysis composed of four separate but interrelated assessments:

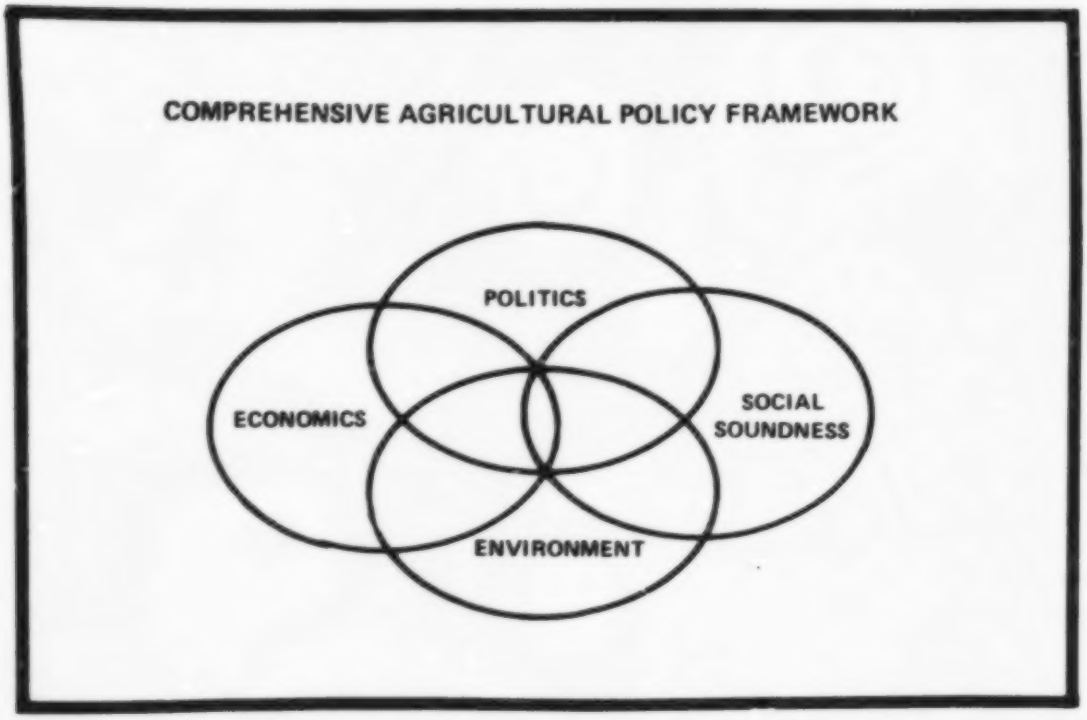
--Economic assessment.

--Social soundness analysis.

--Environmental assessment.

--Political assessment.

This framework provides a more comprehensive basis for assessing the impact of alternative policy options. To understand this framework, it might be helpful to visualize economics, politics, social soundness, and the environment playing overlapping roles in the process of determining a desired farm policy.



Our proposed framework needs further development by USDA and others to flesh out the pertinent issues and subissues, but it can be a starting point in setting up a systematic methodology for developing and considering the impact of various policy alternatives, such as those which would raise or lower support prices.

Economic assessment

An economic assessment should consist of a financial analysis of farms as well as an economic analysis of the secondary effects that farm structure has on other segments of our economy. The financial analysis would measure per unit costs of production by farm, geographic region, type of crop, and mix of crops. It should account for such items as the farm owner's equity, labor, and management; capital items built by the farmer; and nonpurchased inputs such as animal manure or organic composts. In short, the costs of production should account for all items that were bought off the farm or that would have been bought if they had not been available on the farm. This kind of analysis should provide better data to evaluate the cost structure of different farm entities as a basis for developing farm policies.

Another financial analysis should be made of the farmers actual cash flow to provide a good basis for assessing farm sector resiliency compared with its implicit costs to society. The farm structure should be financially sound; therefore, policymakers need to know who the target group should be.

The economic analysis looks beyond the individual farm. It traces and quantifies the effects of farm structure on the farm sector, the community, the region, and the Nation. This analysis should provide data that can be used to weigh the relative benefits and costs of farm policy to other economic sectors. Traditional economic analysis techniques should be able to provide this type of measurement.

Social soundness analysis

A social soundness analysis goes beyond pure economic measurement and attempts to identify and measure qualitative factors such as social well-being and national welfare. While changes in our rural and urban life can be observed and tabulated, evaluating these changes and deciding on what farm structure creates the optimal social well-being or quality of life would require value judgments. While a

broad analysis of all effects of farm policy is necessary, the social soundness analysis may well be a major determinant of future farm policy.

Environmental assessment

An environmental assessment has three components: a technological analysis, a physical environmental analysis, and an institutional analysis. The technological analysis evaluates both biological and mechanical breakthroughs which might alter traditional production patterns and attempts to assess the impact (benefits and costs) on the producer, the consumer, and the Nation. The physical environmental analysis focuses on the effect of policy decisions on renewable and nonrenewable resources and their costs to society. This type of analysis attempts to determine the effects of farm types and sizes on such factors as erosion, pollution, and other ecological elements whose costs or benefits are normally not recognized in financial and economic assessments.

The institutional analysis evaluates the capability of Government agencies responsible for programs that affect the agricultural sector to collaborate and work effectively to implement farm programs the Congress mandates.

The institutional analysis is particularly important. Federal food policy is made by no less than 28 institutions with countless suborganizations, committees, and commissions. The Congress has often expressed concern over duplication and competing programs and Government's ability to respond to rapidly changing conditions.

Beginning with the 1973 farm act, farmers were urged to produce as much as possible with assurance of minimal Government interference. Despite assurances, the Government entered the market on several occasions through food embargoes, informal restraints, and grain agreements. These actions were often sudden, unexpected, and not well planned. The Government acted without benefit of a sound, flexible, and integrated policy mechanism. Attempts to deal with severe price instability and commodity scarcity have occurred as ad hoc, isolated decisions that caused difficulties later. For example, our policy of controlling soybean exports to Japan has resulted in a Japanese-financed Brazilian challenge to U.S. world soybean dominance.

At the heart of all evaluation and oversight activity is a need for basic information on what institutions exist, what they do, and how they interact in developing and implementing food and agriculture policy.

As a starting point in developing overall U.S. food policy, we developed an inventory of Federal programs involved in food, agriculture, and nutrition. ("Inventory of Federal Food, Nutrition, and Agriculture Programs," CED-79-125, Sept. 11, 1979.) Our inventory (which USDA maintains) is an example of the kind of data needed to analyze those institutional activities that should be considered in making broad-based policy decisions. This analysis needs to go beyond USDA because responsibility for the various aspects of food, agriculture, and nutrition policy is broadly spread throughout Government.

Political assessment

The conceptual framework would not be complete without providing for an analysis of the political environment. This consideration might well take the form of a national security analysis that evaluates various policy options as to their possible impact upon the viability, reliability, and resiliency of our food and agricultural system. The analyses should also include evaluation of the international implications of our policy decisions.

Basing policy decisions on this analysis would involve certain difficulties. For one, a series of judgments or estimates must be made whose validity can be tested only by the passage of time. Besides the inherent risks of forecasting, there is also the problem of measuring intangibles. Certain benefits and costs, though generally recognized, are not normally measured in dollars and cents. If the type of analytical framework presented here accounts for these intangible and nonmonetary factors, it will be a considerable improvement over more short-term, limited scope assessments.

Table 6 is a summary of our proposed analytical framework for U.S. farm policy formulation and evaluation that we have developed as a tool for those charged with formulating and administering programs affecting the agricultural sector.

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TABLE 6

PROPOSED CONCEPTUAL FRAMEWORK FOR U.S. POLICY FORMULATION AND EVALUATION

	Economic Assessment		Social Impact	Environmental Assessment			Political Assessment
Evaluation Framework / Type of Assessments	Financial Viability Analysis	Macroeconomic Impact Analysis	Social Soundness Analysis	Technological Analysis (biological and mechanical)	Physical Environmental Analysis	Institutional Analysis	National Security Analysis
Definitions	Assessing the financial viability of the production unit by farm size, geographic region, and cropping systems.	The assessment will go beyond the production unit to cover the broadest perspective—community, State, region and nationwide.	The assessment will go beyond economic indicators and will assess impacts on small vs. large farms, rich vs. poor and developed vs. lesser developed communities, region and/or countries.	Assessing either a biological or mechanical breakthrough which might alter traditional production patterns, and the impact that the assessment has on the producer, the consumer, and the nation (e.g., twinning in cattle, nitrogen fixation of grasses, grain alcohol as a fuel).	The assessment will focus on the impact of policy decisions on renewable and non-renewable resources and its cost to society at the national and world levels.	The assessment of the organizational capacity to work, function, collaborate, and develop adequately to carryout the programs the policy mandates. Coordination and collaboration need to transcend institutional jurisdiction as well as link to State and local efforts.	Assessing the various policy options as to the impact on the viability and resiliency of our food and agricultural system, including the international implications of our policy decisions.
Assessment Goal	A breakthrough farm policy.	An effective and efficient farm policy.	An equitable farm policy.	A responsive and far-reaching farm policy.	An environmentally sound farm policy.	An easily administered, viable farm policy.	A strategic farm policy which can be used to improve world-wide relations.
Assessment Purpose	To present historical information and alternatives about viability of different farm sizes and point out constraints to farm level viability.	To indicate the economic importance of agriculture to the nation and its economy.	To develop a structurally and temporally consistent framework using the analytical criteria that have wealth.	To assess the impact of research and technological transfer before it happens so that adjustments can be made.	To conserve our national resources.	To minimize administrative and coordination bottlenecks and simplify administrative procedures.	To maintain a viable, effective, and efficient food and agricultural system.
Possible Questions	How can participation/non-participation or only a few? Will it pay? Is it less expensive? Is it breakeven? Does it enhance the viability of the farming community?	How many jobs are generated? What is the net benefit of trade? How is income earned into the agriculture? What is agriculture's role in the local, regional, and national economy? Are rural and agricultural communities properly valued?	What are the structural and social implications of the policy decision? What are the forward or backward linkages implicit in our policy decisions? What are the intangible benefits and costs to society?	Will the new technology be available, profitable, affordable, or feasible for all? What could be done to make the new technology more socially sound? Does it make the food system dependent upon certain types of technologies? Does it reduce risks?	Will it grow? What are the environmental implications? Is dependency being built on a non-renewable resource? Is farmland being maintained for the future?	Can the policies be implemented? What are the human and budgetary commitments? Can they be reduced and/or simplified? Are institutional lines of coordination established?	How resilient is the food and agricultural system been maintained? Has the gap between the "haves" and the "have nots" been narrowed? Are the needs being met?
Criteria for Judgment	Rural support indicators. Farm level profitability indicators.	Balance of payments/economic indicators. National income statistical indicators.	Social welfare indicators. Structural indicators.	Research and technology transfer indicators and utilization output indicators.	Natural resources inventories. Research experience. Utilization and conservation indicators. Land use planning and zoning.	.A master plan .Budget .Personnel capabilities .Internal and external coordination.	National security indicators. Economic security indicators. Indicators of food system resiliency.
Important Assumptions	That small-to-mid-sized farms are just as productive as larger farms.	That the disparities between sectors will be minimized.	That an environment in which a family farm system of owner/operators can economically survive is in the best interest of the consumers, the rural economy, and the Nation.	The advancements in technology can be used as a tool for increased efficiency without destroying the family-farm structure.	That environmental consequences a (costs) to society, although perhaps not captured by the producer or manufacturer, should be considered in the total product cost.	That policy implementation will not be constrained by an inadequate institutional capability or funding.	That productivity and equity considerations are not mutually exclusive and will in fact improve the resiliency and therefore the security of our food and agricultural system.

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CHAPTER 5

CONCLUSIONS AND RECOMMENDATION

We were asked to evaluate (1) the concept of parity and (2) the secondary impacts of parity-level price supports.

The concept of parity was developed nearly 50 years ago and it is still a rallying point for many of today's farmers. Members of Congress as well as many farmers and farm support groups rely on parity as a barometer of the farm sector's economic well-being. Also, Government price-support programs have become, and some still are, linked to parity although the support levels have never been 100 percent. Parity support levels have ranged up to 90 percent.

Parity is useful as a barometer or indicator of certain aspects of economic well-being. We have seen that changes in the parity ratio have tracked (1) structure changes (as the ratio has fallen so has the numbers of farms), (2) changes in farmers' margins on a per unit basis, and (3) net farm income from marketing receipts.

The parity ratio does not, however, adequately reflect total farm sector well-being, total personal income of farm families, or increased farm assets and equities.

For many years the trends in U.S. agriculture have been toward greater use of technological advances, declining margins, declining numbers of farms, and increasingly larger farms. Although the Nation has generally benefited from these trends, recent studies have suggested that if they continue unabated, the secondary impacts may well be a loss of farm sector resiliency, a decline in rural viability, a cutback in efforts to conserve our fertile soil, and less competition. Parity by itself is not a good indicator of these impacts.

What would be the impact of parity-level price supports? The evaluation and analytical techniques currently available would not give us a total picture. Not only do we not know what the secondary impacts would be, we do not know whether there would be more or fewer farmers or whether consumers would be better or worse off in the long run. We do know that there would be an immediate effect of higher food prices and higher net farm income.

Based on our work, we have concluded that the Congress and other policymakers need, in addition to parity, a broader framework to use in developing, analyzing, and

evaluating farm policies and programs. We have developed a proposed framework which needs further development to flesh out the pertinent issues and subissues but which can be a starting point in setting up a systematic methodology for considering the impact of various alternative policy options.

Some of these impacts are considered in setting policy today. Our proposal would assist in ensuring that impacts are systematically considered in formulating and evaluating agricultural policy.

RECOMMENDATION TO THE SECRETARY OF AGRICULTURE

We recommend that the Secretary develop a comprehensive and systematic framework for policymakers to use in formulating and evaluating various policy options for U.S. agriculture. To assist the Secretary in this endeavor, we have suggested a framework (see p. 41), discussed the need to define the target of Government programs (see p. 34), and presented an overview of various possible governmental approaches to agricultural policy (see p. 36).

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As the Chairmen requested, we did not obtain formal agency comments. We did, however, discuss a draft of this report with various USDA officials. These officials want to study our recommendation further before offering comments on its merits.

ECONOMIC THEORY AND THE FARM STRUCTURE

Classical economic theory suggests that in a free market structure a natural balance between resources in all sectors of the economy occurs through operation of the law of supply and demand. For example, if a surplus occurs in any sector, prices drop, suppliers lose money, and those unable to cope drop out and work in another sector where there is a greater need for a product or service. In this country, economists traditionally have opposed maintaining a false balance as it relates to any sector unless such a balance is justified by circumstances. Because of its concern about maintaining a family farm system of agriculture and a stable and reliable food supply, the Congress has established programs to intervene in the free market system in an effort to minimize the impacts of continuing farm surpluses.

Since passing the Agricultural Adjustment Act of 1933, the Congress through legislation has repeatedly enacted programs to ensure some balance between the farm sector and other economic sectors. Initially, the Congress attempted to provide this balance through a mechanism called the parity formula. More recently, the Congress has mandated use of other mechanisms to maintain some balance between the agricultural sector and other sectors of the economy.

In upholding the agricultural sector, it is clear that the Congress considers factors other than pure economics. It has apparently recognized that (1) the nature of farming is unique and (2) surpluses are important to the Nation. Farming as a business is unique because it produces products vital to human existence. A steady supply to meet domestic needs is essential. Because the ability of the agricultural sector to manage its total production is affected by weather, insects, plant diseases, and other factors, farmers cannot accurately determine in advance what percentage of a planted crop will be harvested and marketed. Therefore, a certain amount of overproduction in any given year is essential for meeting minimum domestic food needs. Too much surplus, however, causes farm prices to decline rapidly. Not enough surplus or a shortage causes farm prices to skyrocket. Neither situation is in the long-term interests of consumers or farmers.

This fragile balance between small surpluses and deficits has been further complicated since the early 1970s. American farmers now depend not only on a relatively stable domestic market, but also on a potentially unpredictable export market for their income.

The actual demand or effective demand for food is a result of the willingness and ability of individuals to pay for food. Hypothetically, if the farm sector could anticipate effective demand and plan production accordingly, no surplus or shortfall would exist and prices would be relatively stable for the farmer and the consumer.

DEMAND FOR FOOD

The agricultural system in the United States is among the most productive in the world, but its productive capacity has expanded faster than the actual demand for food. The demand for food can be affected not only by Government programs, but also by growth in population, change in per capita income, and a change in income elasticity of demand (see page 53).

Government programs affect the quantity of food demanded in many ways. Through the Food Stamp Program, the Government provides low income individuals with stamps to purchase food which could increase the quantity demanded above what they otherwise could afford. Likewise, the Government has increased effective international demand for U.S. agricultural products through foreign food donations, concessionary sales, and, more recently, direct food sales. U.S. monetary policies also have a direct influence on foreign demand for U.S. food items. The devaluation of the U.S. dollar in the early 1970s markedly increased the effective foreign demand for U.S. agricultural products. Recent Government intervention in the grain market--the Russian embargo--demonstrates how the Government can decrease effective demand.

Effective demand can also be influenced through technological developments which expand the use of a particular product. Use of grains to develop fuel is one example.

People at different income levels spend different proportions of their incomes on food. 1/ As shown in table 7, according to a 1972-74 Consumer Expenditure Survey done by the U.S. Department of Labor's, Bureau of Labor Statistics, the percentage of income spent on food decreases as income

---

1/ For a further discussion of food prices, see the following GAO reports: "What Causes Food Prices To Rise? What Can Be Done About It?" (CED-78-170, Sept. 8, 1978), and "Food Price Inflation In The United States And Other Countries" (CED-80-24, Dec. 18, 1979).

increases. This data supports the economic theory known as Engels law: the smaller a family's income the greater the proportion of it they will spend on food.

TABLE 7

Relationship Between Household Income And Expenditures For Food In The United States, 1972-74

Income class	Total households surveyed (note a)	Food as a percentage of income
	----------percent----------	
Less than $5,000	18.19	38.88
$5,000 to $7,999	14.14	23.01
$8,000 to $11,999	21.17	18.72
$12,000 to $14,999	14.47	15.75
$15,000 to $19,999	16.07	14.26
Greater than $20,000	15.96	10.17

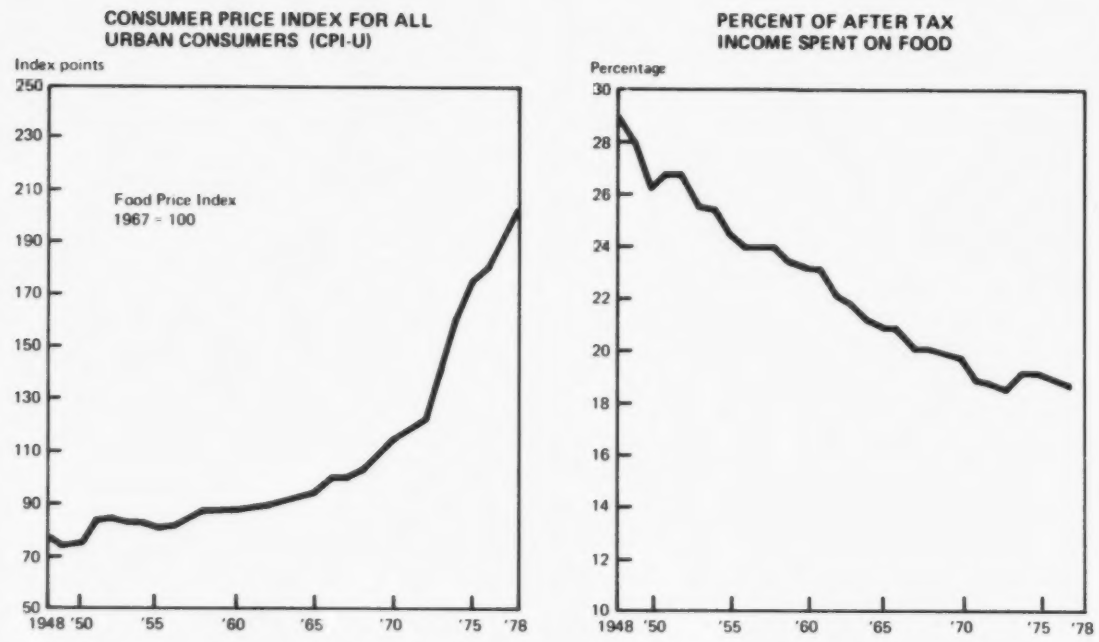
a/Households are defined as family groups of 5.

Source: GAO Report "Food Price Inflation In The United States And Other Countries", CED-80-24, December 18, 1979, 1972-74 Consumer Expenditure Survey, U.S. Department of Labor, Bureau of Labor Statistics.

APPENDIX I

Chart 9 demonstrates how U.S. consumers' average percent of after-tax income spent on food has continually declined over the last 30 years--a period in which consumers per capita income has continually increased.

CHART 9



Source: U.S. Department of Commerce

Income elasticity of demand for food

Income elasticity of demand is measured by the percentage change in quantities bought at given prices in response to a 1-percent change in income holding everything else constant. An income elasticity of 1 characterizes a commodity whose consumption tends to rise in proportion to income. An income elasticity of less than 1 indicates that the quantity purchased grows less in proportion to income growth. Most agricultural products have a low income elasticity; that is, a rise in household income leads to a less than proportionate rise in food consumption. Consequently, as shown in table 7, the proportion of income spent on food falls continually as income increases.

According to economic theory, the degree of income elasticity of demand for different items is in part a function of whether the items are necessities or luxuries. Because food is a necessity although individual food products may not be, the income elasticity for food on the average is less than 1. This indicates that once the income level is high enough to allow people to reach a minimum level of nutritional subsistence, further increases in income do not result in equal increases in food consumption.

While on the average food items have a low income elasticity, some individual products such as wheat, flour, or margarine have a negative income elasticity. As family income rises, consumption of these items declines suggesting that a more desired commodity is substituted for it. Other individual products such as shrimp, filet mignon, caviar, and items considered luxuries have higher income elasticities. Income elasticities for these commodities may be even greater than 1.

PRICE ELASTICITY AND ITS EFFECTS ON THE FARM SECTOR

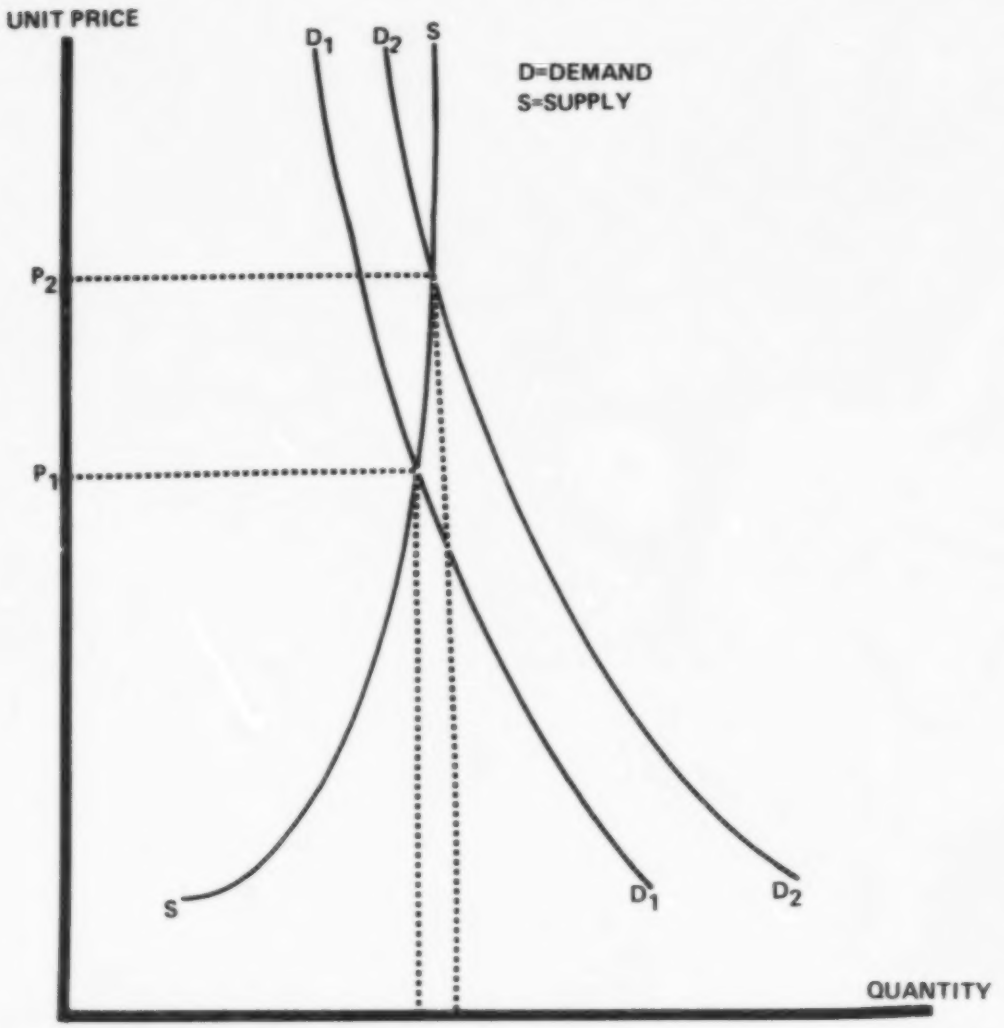
The rate of increase or decrease in effective demand for food can be and is affected by Government actions and income changes. Also, it is nearly impossible to anticipate the desired level of production in any year because weather conditions substantially affect supply. Historically, small amounts of surpluses or shortfalls have drastically affected prices of agricultural products.

We define this phenomenon as the price elasticity of supply. Price elasticity of supply refers to the percentage change in quantity supplied that results from a 1-percent change in price.

In the short-run, the quantity of agricultural products supplied cannot be readily changed. Consequently, random shifts in demand can have substantial short-run effects on the market-clearing price. Chart 10 illustrates the effect of such a demand shift. D_1D_1 is the assumed initial demand schedule and SS is the short-run supply schedule. P_1 is the initial market-clearing price. As the demand schedule shifts from D_1D_1 to D_2D_2, there is a large change in the market-clearing price from P_1 to P_2.

CHART 10[1]

THE EFFECT OF DEMAND SHIFTS IN THE SHORT-RUN



1/ Price x Quantity=Total Revenue

Since many agricultural products are basic necessities of life, the quantity demanded is relatively unresponsive to changes in the price. That is, a one percent change in price results in a less than one percent change in quantity demanded, or, in other words, demand is relatively inelastic with respect to price. As a result, if there is a shift in supply which increases market price, farmers' total revenue will rise because quantity demanded will fall by a smaller percent than the price has increased. Conversely, a supply shift which decreases price causes a decrease in farmers' total revenue.

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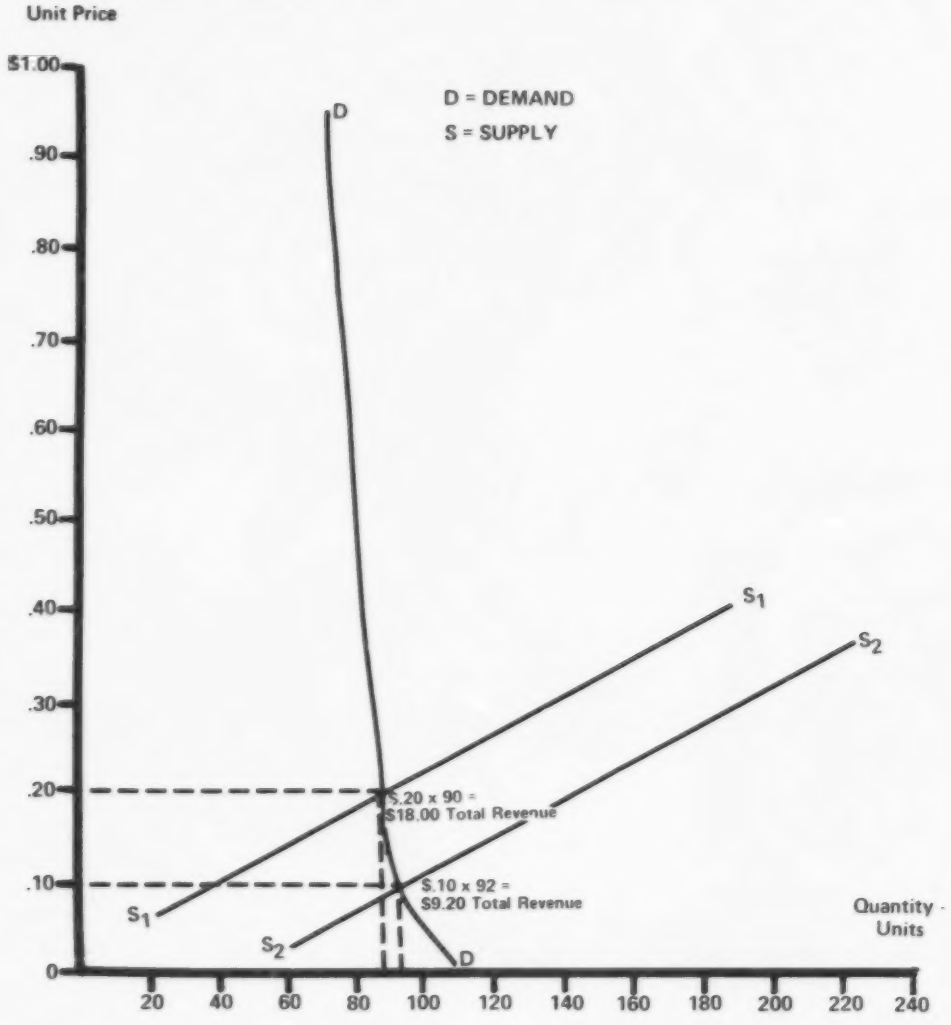
Chart 11 provides a hypothetical example to illustrate these effects. Suppose that DD is the demand curve and S_1 S_1 is the initial supply curve, such that the market-clearing price is $.20 and 90 units are sold. Total revenue is $18. If supply shifts to S_2 S_2 (an increase in supply readily available) the price falls to $.10 while the number of units sold only increases to 92, so that total revenue falls to $9.20. On the other hand, if the initial supply curve were S_2 S_2 and supply shifted to raise the market price, then total revenue increases from $9.20 to $18.

CHART 11[1]

INELASTIC DEMAND FOR AGRICULTUAL PRODUCTS



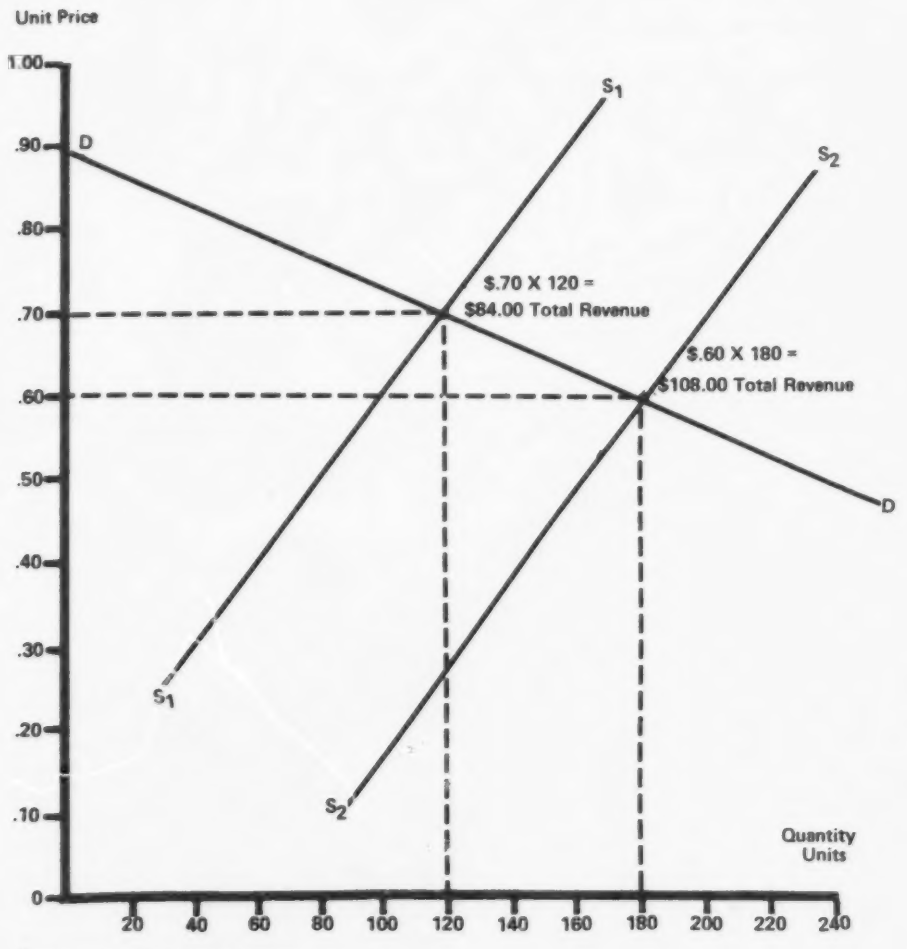
[1]Price x quantity = Total Revenue

APPENDIX I

A comparison of the demand for agricultural products which are considered basic necessities with the demand for consumer goods which are not considered necessities of life emphasizes the special nature of demand for basic necessities. Chart 12 is a hypothetical illustration of an elastic demand schedule for nonnecessity consumer goods. In this case, a supply shift which lowers the market-clearing price increases sellers' total revenue because quantity sold increases more than price falls. Conversely, a supply shift which increases the market-clearing price reduces sellers' total revenue. With supply schedule S_1S_1, 120 units are sold at $.70 for total revenue of $84, while with supply schedule S_2S_2, 180 units are sold at $.60 for total revenue of $108.

CHART 12[1]

ELASTIC DEMAND FOR CONSUMER GOODS



[1] Price x quantity = Total Revenue

APPENDIX I

THE INDIVIDUAL FARMER'S RESPONSE TO THE COST-PRICE SQUEEZE

Ironically and what first appears to be contrary to economic theory, the decline in total revenues caused by price-depressing surpluses has encouraged some individual farmers to get bigger in order to sell more units and offset the declines in net revenue per bushel. This response by farmers can be explained by looking at the market from a farmer's perspective.

The individual farmer does not feel that he can affect total supply or the price by adjusting his output. In fact, the individual farmer considers price a constant and therefore each additional unit sold would add an equal amount to total revenue. Charts 13 and 14 show the interaction of market supply and demand forces and the demand curve faced by the individual farmer, respectively.

To further illustrate the farmer's perspective, assume there are 10,000 corn farmers each producing the same level of output. If any one farmer decides to double production, the total product in the market will only increase 1/100 of 1 percent. This small change in the total product available would have a negligible effect on either total supply or market price. However, if more farmers significantly increase their output, the total supply would greatly increase and the market price would fall. Each time this happens, smaller volume farmers go out of business or become larger to offset declining per unit margins by increasing their output.

CHART 13

AGGREGATE INELASTIC DEMAND FOR AGRICULTURAL COMMODITIES

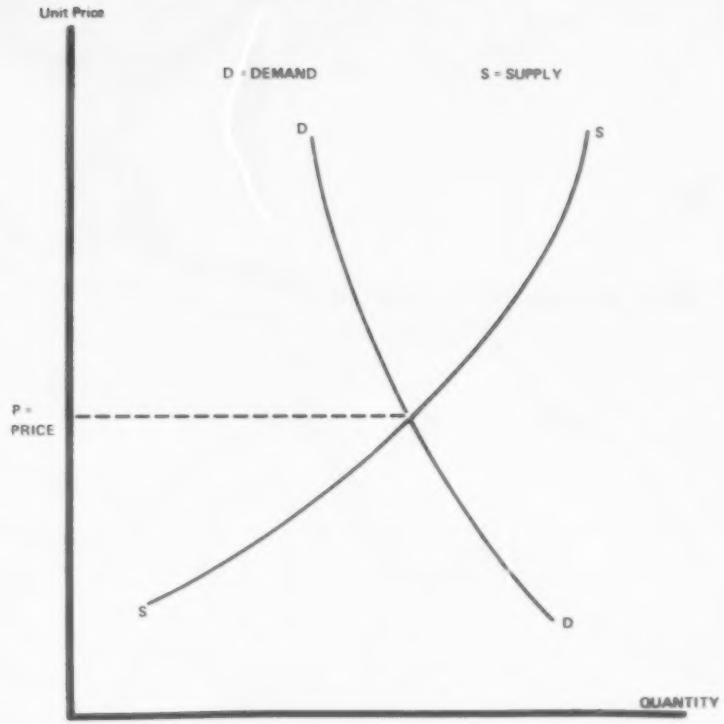
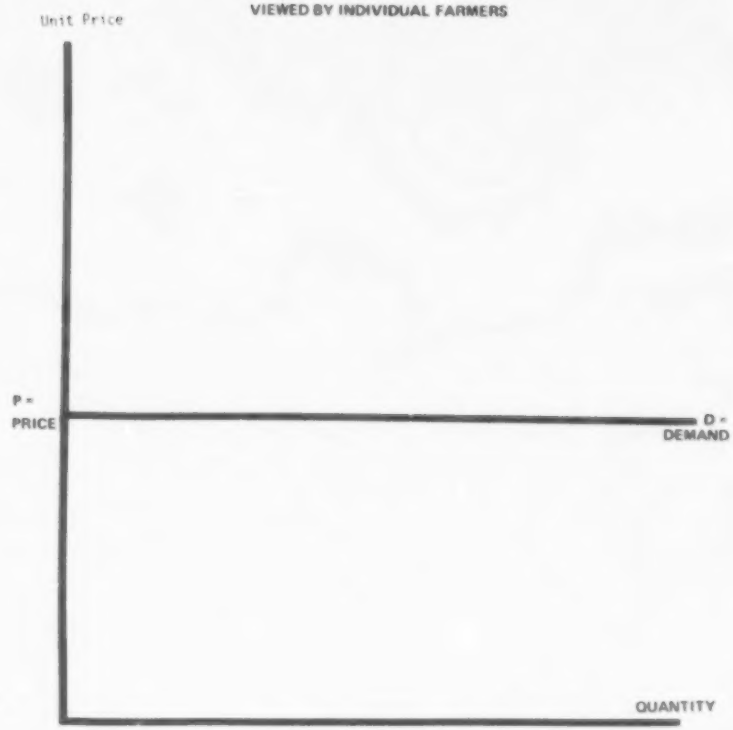


CHART 14

AGGREGATE INELASTIC DEMAND AS VIEWED BY INDIVIDUAL FARMERS



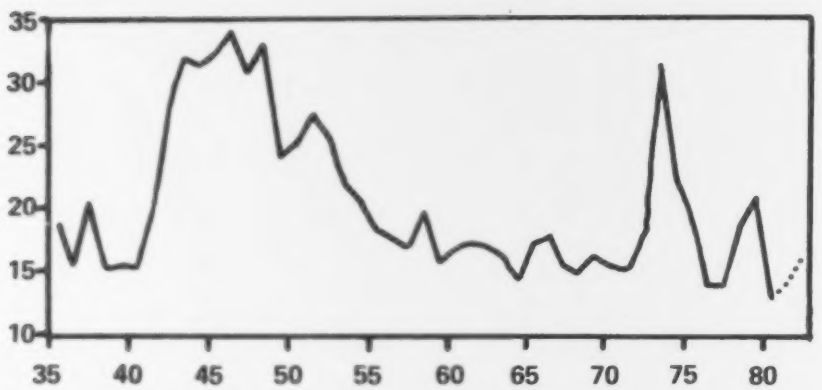
APPENDIX I

GAO ANALYSIS OF USDA'S REPORTED NET FARM INCOME

According to USDA, net farm income is expected to total only $24 billion to $26 billion in 1980, down from $32 billion in 1979. On the basis of USDA-reported net farm income and the implicit price deflator for the Gross National Product (GNP), 1980's net farm income in constant dollars would be among the lowest since the 1930s as shown below.

CHART 15

REAL NET FARM INCOME: 1935 - 1982
(BILLION 1972 DOLLARS)



SOURCE: DATA RESOURCES, INC.

Much of the reported net farm income, however, does not come from marketing receipts and is not in the form of cash income. For example, USDA used the following components to arrive at gross farm income for 1979.

Gross Farm Income 1979 (note a)

		Billion dollars
Cash receipts from farm marketing		$131.5
Net change in farm inventory		4.1
Government payments		1.4
Other farm income		2.1
Nonmoney income:		
Home consumption of food	$1.5	
Rental values of dwellings	9.1	10.6
Gross farm income		149.7
(-) Production expenses		118.6
Net farm income in 1979		$ 31.1

a/Preliminary USDA data.

The following analysis of the 1979 USDA farm income data provides another view of net farm income components.

	Billion	
Cash receipts from farm marketing	$131.5	Production expenditures per dollar of net income from marketing receipts to yield one dollar of net income from the marketplace.
(-) Production expenses	118.6	
Net income from marketing receipts	$ 12.9	$ 118.6 / $ 12.9 = $9.19
Nonmonetary income	$10.6	Nonmonetary income (home consumption of food and rental value of dwellings), other farm income, and Government payments = 109 percent of net income from marketing receipts.
Other farm income	2.1	
Government payments	1.4	
	$14.1	
Farmers' realized incomes	$27.0	
+Net change in farm inventories	4.1	Percent of farmers' income derived from marketing receipts
Farmers' total net income	$31.1	$ 12.9 / $ 31.1 = 47 percent

In summary, farmers have substantially less cash income, especially from marketing receipts, than one would assume from USDA's reported figures. For our analysis of reported farm net income for the 10-year period 1971-80 see page 63.

According to USDA officials, USDA plans to publish statistics beginning in September 1980 that would more accurately reflect the farmers' cash flow situation.

TABLE 8

GAO ANALYSIS OF

NET FARM INCOME AND ITS COMPONENTS - 1971 TO 1980
(billions of dollars)

	1971	1972	1973	1974	1975	1976	1977	(Revised) 1978	(Preliminary 1/ 1979	Low 2/ 1980	High 1980	Medium 2/ 1980
Cash Receipts Farm Marketing	$52.9	61.2	87.1	92.4	88.2	94.8	95.7	112.5	131.5	123.4	130.5	132.7
Production Expenses	$47.4	52.3	65.6	72.2	75.9	83.1	88.8	100.8	118.6	123.6	118.2	124.8
Net Income From Marketing Receipts	$ 5.5	8.9	21.5	20.2	12.3	11.7	6.9	11.7	12.9	-.2	12.3	7.9
Production Expenditures to Earn $1 of Net Income From Marketing Receipts 3/	$ 8.61 / 1	5.88 / 1	3.05 / 1	3.57 / 1	6.17 / 1	7.10 / 1	12.87 / 1	8.62 / 1	9.19 / 1	- / 1	9.85 / 1	15.80 / 1
Non-monetary Income and Government Payments and Other Farm Income	$ 7.7	9.0	8.4	7.5	8.7	9.4	11.8	13.9	14.1	16.0	14.1	15.5
Farmers' Realized Income	$13.2	17.9	29.9	27.7	21.0	21.1	18.7	25.6	27.0	15.8	26.4	23.4
Net Change in Farm Inventories	$ 1.4	.9	3.4	-1.6	3.4	-2.4	1.1	.4	4.1	2.0	.5	-.02
Farmers' Total Net Farm Income	$14.6	18.8	33.3	26.1	24.4	18.7	19.8	26.0	31.1	17.8	26.9	23.38
Percent of Farmers' Income Derived from Marketing Receipts	37.7%	47.3	64.6	77.4	50.4	62.6	34.8	45.0	41.0	0	45.7	33.8

1/1978 (revised) and 1979 (preliminary) data are based upon unpublished USDA statistics.

2/1980 low and medium estimates are based upon Data Resources Incorporated projections.

3/Figures for this item are in dollars and cents; not billions of dollars.

APPENDIX II

U.S. AGRICULTURAL TRADE

With devaluations of the U.S. dollar and a shift to a floating exchange rate in the early 1970s, U.S. agricultural commodities became competitive on the world market. Agricultural exports are now vital to the U.S. economy, especially since our agricultural system is capable of producing far more than we presently consume.

In 1978 our total exports were $141.9 billion and our imports totaled $176.1 billion for a trade deficit of over $34.2 billion. The deficits were most pronounced in oil and fuels ($38.4 billion), consumer goods ($17.9 billion), and automobiles ($9.9 billion). Agriculture had a trade surplus of about $14.6 billion, exporting over $29.4 billion and importing $14.8 billion. In the last decade, the dollar value of U.S. agricultural exports has more than quadrupled, rising from $6.7 billion in fiscal 1970 to $29.4 billion in fiscal 1978. Much of this increase has resulted from increased commodity prices.

Agriculture exports contribute to the general economy in addition to the increases they bring in farm income. Over a million jobs are directly or indirectly linked to producing, assembling, and distributing farm exports. In addition, according to USDA, the dollar value effect of agricultural exports on our business activity is about double the export sales dollar. Thus, exports of $1 million could generate close to $2 million in additional business activity here.

Most of the dollar value of U.S. food exports comes from grain sales, in which the United States is a dominant force. We export about 75 percent of our rice, more than 50 percent of our wheat and soybeans, and 25 percent of our corn. The United States and Canada now control about two-thirds of the world grain trade, with the United States having about 45 percent of the world's wheat market.

Forty percent of U.S. food exports go to Europe; the European Economic Community (EEC) countries purchase two-thirds of that amount. Japan is our next biggest buyer, purchasing nearly 15 percent. In 1977 the developing nations purchased 31 percent of our agricultural exports, including 58 percent of our wheat and 74 percent of our rice.

The U.S. price for grain is considered by most nations to be relatively low. The U.S. support price for wheat in October 1978 was $86 per metric ton. In Japan it was over $844 per ton; France, $185; Guatemala, $261; New Zealand, $142; Switzerland, $644; and Canada, $111. A similar situation existed for corn. The U.S. support price was $79 per metric ton in October 1978 while it was $209 in Costa Rica, $199 in the EEC, and $416 in Switzerland.

Most developed nations have preserved their smaller farm structure through a variety of government policies and are reluctant to lower their trade barriers for political and socioeconomic reasons. Their citizens spend considerably more of their disposable income on food than do consumers in the United States and Canada.

A recent USDA report indicated that the EEC protects its basic grain farmers by assessing levies on corn, soft and hard wheat, barley, oats, and rye imported from nonmember countries. According to the report, the levies increased the prices of imported grains by an average of 150 percent between 1974 and 1978.

U.S. AGRICULTURAL TRADE:
ISSUES FOR CONSIDERATION

Have our agricultural trade policies been adequate? The volume and price at which the U.S. exports wheat and corn have major implications here and abroad. Generally, U.S. domestic and export policies which affect the food and agricultural sectors of the world need to be reexamined. The issues which need to be addressed are as follows:

For the United States

1. Given the magnitude of U.S. exports of wheat and corn, is the U.S. artifically holding down the world market price?

2. Why is the U.S. domestic and export price for corn and wheat nearly always the lowest in the world? (American farmers claim that the product margin on basic grains at today's prices are so low that only the largest volume producers can stay in business.)

3. What has been and is the impact of shifting our monetary policies to a floating exchange rate on our major agricultural export producers?

4. To what degree does promoting U.S. grain for exports require the United States to admit food products which compete with U.S. production, and what is the effect of these imports on (1) U.S. farm structure, (2) U.S. employment, and (3) food availability and cost in the country involved?

5. To what degree does U.S. production for export prompt Government policies that favor large, capital-intensive farming?

6. What would be the effect on U.S. farm structure of entering stabilized commodity agreements with developing countries similar to those the United States has with the Soviet Union? Would these agreements tend to stabilize U.S. and world grain prices? Would this stability assist these countries in developing basic food production as well as general economic development?

7. Many countries have made conscious decisions to preserve their farm structures. These decisions affect not only farm income and farm size but the structure of the food marketing system. To what degree would adjustments maintaining current farm structure or increasing regional diversity in agriculture change U.S. grain export capacity?

For developed nations

1. Does U.S low grain prices effectively limit world market competition to those nations that have adopted similar farm policies?

2. Are U.S. farm policies compatible with the other developed nation's desire for basic grain self-sufficiency?

For the developing nations

1. Are low U.S. and world market prices for basic grains beneficial to the third world nations or do they act as deterrents to domestic production?

2. Because most of the rural poor farmers in the third world countries are producers of basic grains, wouldn't higher U.S. and world market prices be incentives for these countries to increase production? If so, what would be the impact on third world urban poor of higher food prices?

3. Is there a conflict between U.S. agricultural trade and our developmental aid objectives?

ANALYSIS OF ECONOMIC IMPACTS OF PARITY PRICES BY USDA AND CBO

In early 1979, the Department of Agriculture and the Congressional Budget Office (CBO) made separate analyses of the economic impacts of parity price proposals made by the American Agricultural Movement (AAM). AAM proposed that the prices of the major agricultural commodities--wheat, feed grains (corn, sorghum, barley, and oats), soybeans, cotton, and milk--be supported by the Government at 90 percent of parity. It proposed that these price levels be achieved by limiting supplies through voluntary or mandatory restrictions on production.

USDA made its analysis both with and without the formation of an export cartel for these commodities. The cartel would fix the commodity prices and the world market share to be produced by each of the major exporting countries. CBO analysis did not consider the possible impact of an export cartel.

USDA used a complex estimation procedure that relied both on large-scale models and the judgment of experts. CBO used a single model to estimate several major types of impacts.

The major economic impacts of the AAM proposals as estimated by USDA and CBO at 90 percent parity are discussed below. The basis for the USDA comparisons is the forecasted change under the AAM proposal versus the forecasted change without the proposal but under a continuation of present policies. The basis for CBO comparisons is the change from the base year of 1978. Both analyses reflect approximately the 1979-83 period.

APPENDIX IV

USDA ANALYSIS

Impact		Percent change: Cartel	Percent change: No cartel
1. Increase in net farm income:	1979	+50	+50
	1983	+90	+80
2. Increase in consumer prices in 1979:			
	Beef	+ 9	+ 9
	Pork	+ 5	+ 5
	Poultry	+ 4	+ 4
	Milk	+ 5	+ 5
	All foods	+ 6	+ 6
(Minor subsequent increases)			
3. Decline in consumption by 1983:			
	Beef	-11	-11
	Pork	-14	-14
	Poultry	- 4	- 4
	Milk	- 4	- 4
4. Decline in farm production			
by 1979:	Beef	- 2	- 2
	Pork	- 1	- 1
	Broiler	- 3	- 3
	Milk	- 1	- 1
by 1983:	Beef	-10	-10
	Pork	-13	-13
	Broiler	- 4	- 4
	Milk	- 1	- 1
5. Decline in feed use:	1979	- 7	- 7
	1983	-11	-11
6. Decline in acreage of major crops:	1979	-10	-11
	1983	-18	-28
7. Changes in exports by 1983:			
Overall increase in value		+25	-
Overall decrease in volume		-20	-45

APPENDIX IV

Impact	Percentage change: Cartel	No cartel
Changes in export volume by 1983:		
Wheat	-12	-40
Feed grains	-20	-44
Rice	+25	+24
Soybeans	-15	-27
Cotton	-50	-75
8. Increases in values by 1983:		
Farm assets	+65	+60
Farm land	+55	+33
9. Increased program outlays: 1979	$10 billion	$18 billion
1983	$.2 billion	$14 billion

In addition, under both the cartel and no cartel scenarios, the Gross National Product would decrease one-tenth of one percent after 2 years and employment would also decrease two-tenths of one percent (200,000 fewer jobs) during the same period.

APPENDIX IV

CBO ANALYSIS

Impact		Percentage change
1. Increases in consumer prices in 1980:		
	Food prices	+7.75
	Overall CPI	+1.50
in 1981:	Food prices	+1.50
	Overall CPI	+ .75
2. Changes in farm production by 1983:		
	Wheat	- 21
	Feed grains	- 19
	Soybeans	+ 13
	Cotton	- 20
3. Decline in the volume of exports by 1983:		
	Wheat	- 53
	Feed grains	- 51
	Soybeans	- 71
	Cotton	- 37
4. Increased program outlays:	1980	$12.5 billion
	1983	$20 billion

APPENDIX V

AGRICULTURE: PARITY, PARITY, PARITY

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ISSUE DEFINITION

Parity, defined by Webster as "the state of being equal or equivalent," has been a part of American agriculture since the 1920s when the phrase "equality for agriculture" came into popular use. Since then, there have been repeated attempts by American farmers to gain economic parity, generally through protest movements like those in early 1978 and early 1979. The protest movement of farmers in the early 1930s led to the Agricultural Adjustment Act of 1933, which initially formalized the concept of parity. As written into law, parity was a mathematical comparison of prices farmers paid and prices they received. This ratio of prices, called the parity ratio, became a widely used barometer of how well farmers were faring economically. Numerically, the ratio was set equal to 100 for the period 1910-14. In the years thereafter, prices paid by farmers (the denominator) went up faster than prices received by farmers (the numerator) and the ratio of the two price indexes, the parity ratio, declined. In February 1980 the ratio was 65, down 9 points from a year earlier. Two other parity measures -- parity income and parity prices -- are described below.

BACKGROUND AND POLICY ANALYSIS

The historical "roots" of parity go back to the decade following World War I. Throughout that turbulent period, which led up to the Great Depression of 1929, American agriculture suffered from low prices and depressed farm incomes. At the exhortation of their government, American farmers had geared up production to meet a national emergency, World War I. When the war ended in 1918, foreign demand for American grain and cotton dropped sharply, leaving large amounts of farm surpluses. These surpluses depressed farm prices and thrust depression-like conditions on farm families.

As farm prices plunged and farm incomes declined, farmers cut back on purchases of all types of manufactured goods. This action hit farm machinery makers hard because they also had geared up production during the War period. When there was no Federal response to the severe income problem of farmers, leaders in the farm supply companies began to push plans of their own.

Two of these leaders, George N. Peek and Hugh S. Johnson, with the Moline Plow Company of Moline, Illinois, saw the problem in simple terms: farm prices had dropped after the war but prices of manufactured items had not. Their answer: reestablish farm prices to their former level and thereby rebuild farm purchasing power.

Peek and Johnson took this idea to the National Agricultural Conference of 1922. When the response was favorable, their next step was to draft a pamphlet titled "Equality for Agriculture" that outlined the problems that low farm prices caused and included a somewhat complicated solution: Separate farm markets into two markets, a domestic market and an export market. Next, maintain the prices of farm commodities in the domestic market at a fair exchange value.

This idea was developed more fully by personnel of the U.S. Department of Agriculture and drafted into legislation by the Senate Drafting Service in 1923. It was introduced into Congress on Jan. 16, 1924, by Senator McNary of Oregon and Representative Haugen of Iowa.

The McNary-Haugen Plan, as it came to be known, was to face Congress in each session between 1924 and 1928. Twice it was defeated by the House of Representatives and twice it passed Congress only to be vetoed by the President. Its major contributions were the national debate it generated on agricultural issues and the numerical concept that it developed for measuring "fair" prices for agriculture.

The bill's numerical concept for measuring a "fair" price sounded complex: A fair price at any point in time was defined as that price that would bear the same relation to the general price level as the price of the commodity had during the period immediately prior to World War I. But it actually was fairly simple. To illustrate, the pre-war price of wheat was 98 cents when the WPI (wholesale price index), which measured the general price level, had a value of 100. By 1923, the WPI stood at 156 and farm proponents argued that a fair price for wheat was 156% of 98 cents or $1.53 per bushel. This concept would later become known as the "parity price" for wheat. The actual price recieved by farmers for wheat in 1923 was 92 cents per bushel.

Legislative Enactment of Parity

The defeats of the original "fair" price plans between 1924 and 1928 were not the result of congressional and Presidential disfavor with the price concept but rather with the export dumping and domestic price fixing necessary to maintain such prices. Consequently, when the Great Depression struck in 1929, the concept of fair farm prices continued to be stressed even though the other aspects of the McNary-Haugen plan were quietly shelved.

By 1933, the severe economic conditions facing agriculture created an environment favorable to the passage of emergency farm legislation. This legislation, the Agricultural Adjustment Act of 1933, part of which was later declared unconstitutional, included a fair price objective for farm products. Fair farm prices, it stated, were prices that "give agricultural commodities a purchasing power with respect to articles farmers buy, equivalent to the purchasing power of agricultural commodities in the base period." The base period was specified as 1910-1914.

The 1933 AAA charged the Secretary of Agriculture to implement the price objective, which at that point was not yet referred to as parity. The legislation established a new numerical method for calculating "fair" prices. The new method related the prices received by farmers to those they paid for inputs, rather than to the level of wholesale prices received by nonfarm sellers. The reasoning was that farmers bought items at retail rather than wholesale prices, so their "fair" selling prices should reflect changes in the retail prices paid.

The retail prices used were those that the Department of Agriculture had earlier included in a new statistical series called the Prices Paid Index. That index was similar to the WPI in one respect -- it was given a base value of 100 for the period 1910-1914.

Revisions of Parity Prices

The years of efforts to pass farm legislation in the pre-1929 era built up

a strong and well-organized farm pressure group. When it finally achieved success in establishing the goal of fair prices in the 1933 AAA, there was strong pressure for further action to improve farm prices. One of the first steps came in 1935 when Congress was encouraged to include interest payments on farm mortgages and tax payments on farm real estate in the Prices Paid Index. Since both interest payments and real estate taxes were rising faster than other input prices, their addition to the Prices Paid Index tended to increase its level and, in turn, increase the level of parity prices.

The next step came in 1936 after the Supreme Court ruled parts of the 1933 Act unconstitutional. Congress responded by passing the Soil Conservation and Domestic Allotment Act. It included another concept of parity -- parity income. Instead of using a measure of parity based only on prices, Congress now based it on net income, thus bringing quantities of products purchased and quantities of products sold by farmers into the calculation. The language in the 1936 Act specified that the Secretary of Agriculture was to reestablish, as rapidly as practicable, "the ratio between the purchasing power of the net income per person on farms and that of the income per person not on farms that prevailed during the five-year period August 1909-July 1914."

While parity income had many advantages, it soon became obvious that it was far more complex and difficult to calculate than parity prices. In general, accurate calculations could not be completed until after farmers sold their products, often at the end of the year. When farm prices slumped badly in mid-1937, Congress was not willing to wait until the year's end for the statistical results. Steps were taken to reestablish a concept of parity based on prices. This was accomplished in the 1937 Agricultural Marketing Act. Congress directed the Secretary of Agriculture to "establish prices to farmers at a level that will give agricultural commodities a purchasing power with respect to articles which farmers buy, equivalent to the purchasing power of agricultural commodities in the base period."

The next revision of the parity concept came in the 1938 Agricultural Adjustment Act, the culmination of a decade of efforts by farm groups for effective farm legislation. The 1938 AAA finally defined parity prices in the law. In addition, it spelled out the methodology for calculating parity prices. In reality, this meant that the technical methodology that had been developed by the Department of Agriculture after passage of the 1933 Act was incorporated into the 1938 law and thereafter could only be changed by Congress.

The following simple formula for calculating a particular commodity price was adopted:

Average Price during the Base Period (1910-1914)	x	Current Value of Prices Paid Index (1910-14=100)	=	Current Parity Price

This formula was useful for its simplicity but it soon gave results that created problems. The primary problem was the fixed relationship between different commodity prices. In the case of each commodity, its price in the 1910-1914 period was multiplied by the same number, that is, the current value of the Index of Prices Paid. This resulted in a constant relationship between the parity prices of different commodities regardless of evolving market relationships or even changes in the costs of production. This meant that some commodities, mainly crops where technological change was raising

yields per acre, were experiencing very favorable returns per acre relative to other commodities. This soon resulted in overproduction of those commodities. The problem remained until the tumultuous policy-making years after World War II when changes finally were made in the parity formula.

Evolution of Modernized Parity

Among the many battles over Farm Policy in the Post-World War II period, the attempt to change the computation of parity prices was among the most difficult. Strong farm interests were present on all sides and the issue had been around long enough so that it was relatively well understood. Any change meant higher parity prices for some products and lower prices for others. In the compromise Farm Act of 1948, a "transitional" parity formula was developed to pave the way for more flexible parity prices. A "modernized" parity formula would become effective but not until Jan. 1, 1950. This date was later extended due to the Korean War.

The change in the parity formula was designed primarily to remove the fixed price relationships. The new concept accomplished this by replacing the base year price (1910-1914) with a moving average of prices received by farmers for each commodity. This moving average was specified as the most recent 120-month average of prices received by farmers for the specific commodity. As currently calculated, a 10-year average price is determined each January. It is then used each month during the following calendar year in parity price calculations. For example, the 1970-1979 average is used in 1980. In actual use, the 10-year average price is first deflated by dividing it by the average value of the Index of Prices Received by farmers (with 1910-1914=100) during the same 10-year period. This yields an "adjusted base price." This "adjusted base price" is then multiplied by the current month's Index of Prices Paid to give the current month's parity price for that commodity.

The formula for a given commodity becomes:

$$\frac{\text{Average Price of Commodity over the most recent 10-year period}}{\text{Average Index of Prices Received by Farmers over the most recent 10-year period (1910-1914=100)}} \times \text{Current Month's Index of Prices Paid by Farmers (1910-1914=100)} = \text{Current Month's Parity Price for specific commodity}$$

These calculations are made once each month by the Statistical Reporting Service of the Department of Agriculture and published in its periodical, Agricultural Prices. They provide a base set of "fair" farm commodity prices for comparison with current market prices.

Uses of Parity Prices

Following are some of the more significant uses of parity prices:

(1) To measure changes in the purchasing power of a unit of a commodity. A comparison of the parity price with the price actually received by farmers for a commodity gives a measure of the change in the per unit purchasing power for that commodity.

		February 1980 Farm Prices	
		100% Parity	Actual Market
Wheat	(bushel)	$6.36	3.75
Corn	(bushel)	4.41	2.36
Cotton	(pound)	1.05	0.62
Soybeans	(bushel)	11.10	6.14
Milk (all)	(cwt)	17.60	12.80
Beef cattle	(cwt)	80.40	66.80
Hogs	(cwt)	75.40	37.20
Eggs	(dozen)	1.01	0.51

(2) To determine support-price levels. Historically, legislation requiring or authorizing the United States Department of Agriculture to support prices of agricultural commodities has not specified the dollars-and-cents prices at which the commodities are to be supported. Instead, legislation indicated a specific percentage of parity, or a range in percentage of parity, at which the commodity must or may be supported. Since 1974, parity prices no longer determine support prices for such commodities as the food and feed grains, and upland cotton. Price support for those commodities are based on "target prices" specified in the law. Parity prices are used for milk, however.

(3) To administer marketing-agreement and marketing-order programs. Parity prices are used in the administration of marketing-agreement and marketing-order programs for dairy, fruits, vegetables, and certain other agricultural commodities, including nuts, tobacco, and hops, as provided in the Agricultural Marketing Agreement Act of 1937, as amended. Under such programs, the handling of an applicable commodity is subject to regulation; the statute authorizes no action that has for its purpose the maintenance of prices to farmers above the parity level.

The Parity Ratio

The third type of parity measure -- besides parity prices and parity income -- is the so-called parity ratio. While simple in concept, it may be the most complex to interpret and evaluate. As it evolved over the years after the 1933 AAA was passed, it was simply the ratio of "prices received by farmers" and "prices paid by farmers." The Department of Agriculture, using its technical talents, had gathered data on both sets of prices from farmers and other businesses beginning as early as 1910. These prices were then combined, using proper statistical techniques, into the two indexes -- prices paid and prices received -- and publication began in 1922. Each index was set equal to 100 for the base period 1910-1914. The ratio of the two indexes

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was termed the "parity ratio."

The question is: what does it tell us? Given below is the Department of Agriculture's explanation from the December 1977 issue of Agricultural Prices:

> The Parity Ratio provides an indication of the per unit purchasing power of farm commodities generally in terms of the goods and services currently bought by farmers, in relation to purchasing power of farm products in the 1910-1914 base period. Thus, a Parity Ratio greater than 100 indicates that the average per unit purchasing power of all farm products is higher than in 1910-1914.
>
> The Parity Ratio is a measure of price relationships; not a measure of farm income, of farmers' total purchasing power, or of farmers' welfare. The latter depends upon a number of factors other than price relationships, such as changes in production efficiency and technology, quantities of farm products sold, and supplementary income, including that from off-farm jobs and federal farm programs.
>
> An adjusted parity ratio is computed and published which incorporates and reflects supplementary income from federal farm programs. A "Preliminary Adjusted Parity Ratio reflecting Government payments" based on the forecast of direct Government payments for the year is published each month in AGRICULTURAL PRICES.

Of considerable importance to farmers is what factors are included in the Prices Paid Index. Given below are the cost components and their individual importance in the Index.

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PRICES PAID INDEX: RELATIVE IMPORTANCE OF COMPONENTS

COMMODITY GROUP	RELATIVE IMPORTANCE 1971-1973	RELATIVE IMPORTANCE June 15, 1977
	Percentage	
Consumer Price Index (CPI)	30.4	28.0
Production	57.6	59.4
Feed	11.8	12.2
Feeder Livestock	11.7	7.4
Seed	1.8	2.1
Fertilizer	4.2	5.1
Agr. Chemicals	1.7	1.6
Fuels & Energy	3.5	4.2
Farm & Motor Supplies	2.2	2.0
Autos & Trucks	2.5	2.8
Tractors & S-P Machines	4.5	5.4
Other Machinery	2.7	3.3
Building & Fencing	3.6	4.0
Farm Service & Cash Rent	7.4	9.3
Total Commodities	88.0	87.4
Interest	4.0	5.0
Taxes	2.8	2.4
Farm Wage Rates	5.2	5.2
All Items	100.0	100.0

It is the monthly publication of data that go into the parity ratio that has made it so appealing to those who follow the farm situation closely. It provides a score card on agriculture once each month much like the monthly consumer price index, the unemployment rate, and the more comprehensive economic indicators do for the general economy.

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Given below are the historical and more recent levels of the parity ratio and other measures of the economic health of agriculture.

Economic Trends in Agriculture

	Parity Ratio	Income per Farm Family From farming	All sources	Farm Income as a Percent of Nonfarm	Net Assets Per farm
1910-1914	100	$ 620	—	—	--
1915-1919	109	1,085	—	—	--
1920-1924	89	752	--	--	--
1925-1929	91	942	--	--	--
1930-1934	69	454	--	--	--
1935-1939	86	734	$1,162	40.2	--
1940-1944	100	1,440	2,109	47.8	$ 9,073
1945-1949	109	2,500	3,473	60.7	18,796
1950-1954	98	2,683	3,955	58.0	27,796
1955-1959	83	2,637	4,097	49.6	38,010
1960-1964	79	3,128	5,801	58.6	51,345
1965-1969	76	4,162	8,692	70.7	72,989
1970-1974	78	7,457	14,605	86.8	109,495
1975	76	7,617	17,539	88.4	158,725
1976	71	7,712	18,798	77.7	180,725
1977	66	7,439	19,035	81.6	207,742
1978	71	10,036	22,865	90.6	306,961

These data indicate that the trend in the parity ratio has been downward since 1950. In contrast, other measures of the farm economy have shown an upward trend. Income per farm has increased, particularly if income from nonfarm sources is included. The net equity of farm families has increased dramatically, despite the falling parity ratio.

The different economic pictures indicated by the parity ratio and income measures suggest a weakness in one or the other of these measures. The weight of informed opinion has been that the parity ratio is the weaker measure of farm economic conditions.

First, there is the fact that the parity ratio only measures prices. It does not include any measure of the quantities of inputs purchased or the quantities of products sold. As farms increase in size and take advantage of economies of scale, this weakens the comparison of the parity ratio in one time period with that of another time period.

Second, the parity ratio does not take into account any improvements in farm productivity. One source of improved productivity has been rising crop yields. Rising crop yields have meant that for a given amount of purchased inputs, a greater amount of output is produced. In turn, gross sales can be increased and even with higher input prices, i.e., a falling parity ratio, net returns may be higher. This accounts for much of the rise in farm incomes and asset values at the same time that the parity ratio was falling.

Third, the parity ratio does not take into account shifts in the tastes and preference of consumers. Such shifts can reduce (or increase) the amounts of a commodity that is purchased and result in a decline (or increase) in its price and a fall (or increase) in the parity ratio. If the ratio falls for this reason, however, it differs from the typical interpretation of a declining parity ratio -- that is, in this instance, the falling price is reflecting a permanent change in the market rather than a temporary oversupply or a temporary fall in demand. Propping up the falling price will only result in a buildup of stockpiles of the affected commodity.

Fourth, because the parity ratio does not take quantities into account, it ignores the opportunity of producers to cut back on purchases during a period of rising input prices or to cut back on sales during a period of falling product prices. Such measures can temporarily offset the impact of adverse changes in prices. However, these measures can only be effective for short periods of time.

LEGISLATION

In the 95th Congress, 2d session, the following legislation was passed and signed into law by the President:

P.L. 95-279 (H.R. 6782)

Emergency Agricultural Act of 1978. As introduced, permitted marketing orders under the Agricultural Adjustment Act, as reenacted and amended by the Agricultural Marketing Agreement Act of 1937, to include provisions concerning marketing promotion, including paid advertisement, of raisins. Authorized distribution among producers of the prorata costs of such promotion. Introduced Apr. 29, 1977; referred to the Committee on Agriculture. Passed House, amended, on Oct. 31, 1977. S. 2690 was

incorporated into the measure on Mar. 13, 1978 (see below). Measure passed Senate, amended and with provisions similar to S. 2481 inserted (see below) on Mar. 21, 1978. A motion to disagree with the Senate amendments was passed in the House on Mar. 22, 1978, and conferences were scheduled to begin on April 3. Conference report filed in House (H.Rept. 95-1044) on April 6. Senate agreed to report on April 10. The conference report was rejected in the House on April 12. However, on April 24 the House requested further conference. On May 1, 1978, a second conference report (H.Rept. 95-1103), which excluded the flexible parity concept from the act, was submitted by Mr. Foley. On May 2 the Senate agreed to the conference report by a voice vote. On May 4, the House agreed to H.Rept. 95-1103 by a 212-182 vote. On May 16, 1978, the President signed H.R. 6782 into law.

In the 96th Congress, the following legislation has been introduced:

S. 1 (Dole et al.)

Amends the Agricultural Act of 1949 to require the Secretary of Agriculture to put into operation coordinated set-aside and price support programs for the 1980 and 1981 crops of wheat, feed grains, and cotton. Extends the current price support authority for milk, and sets the minimum price support for sugar. Amends the Food Stamp Act of 1977 to remove the ceiling on authorizations. Amends the Agricultural Trade Development and Assistance Act of 1954 to require minimum exports of United States farm commodities. Establishes the National Agricultural Production Cost and Statistical Standards Board. Introduced Apr. 15, 1979; referred to Committee on Agriculture, Nutrition and Forestry.

S. 80 (Nelson)

Amends section 201 of the Agricultural Act of 1949, as amended, to extend until Sept. 30, 1981, the requirement that the price of milk be supported at not less than 80 per centum of the parity price thereunder. Introduced Jan. 18, 1979; referred to Department of Agriculture for report and to Subcommittee No. 3 on Feb. 12, 1979.

S. 418 (Kassebaum et al.)

Amends the Agricultural Act of 1949: (1) to set the established prices for individual producers for the 1979 and 1980 crops of wheat and corn, and for the 1979 crop of upland cotton, at levels related to such producers' voluntary set-asides. Establishes a National Agricultural Production Cost and Statistical Standards Board. Introduced Feb. 9, 1979; referred to Committee on Agriculture, Nutrition and Forestry.

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